

The American Journal of Pharmaceutical Education

**The 1948 Meetings will be held in San Francisco
during the week beginning August 8**

**THE OFFICIAL PUBLICATION OF THE AMERICAN
ASSOCIATION OF COLLEGES OF PHARMACY**

"It is important to American Pharmacy that a high type of personnel is chosen for the federal services dealing with the health of the military as well as civilian agencies.

"The Public Health Service touches upon so many phases of health activity both in and out of the Federal field, that pharmacists seeking a career with possibilities of broad contacts and opportunities to serve in their professional capacity will find service in this branch of the Government a very satisfying and stimulating experience."

—Robert P. Fischelis.

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Number 2

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THE AMERICAN JOURNAL OF PHARMACEUTICAL EDUCATION

Volume XII

April, 1948

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CONTENTS

The Earmarks of a Profession— <i>Lloyd E. Blanch</i>	243-255
Research—A Never Ending Human Endeavor— <i>C. A. Elvehjem</i>	256-264
Industrial Pharmacy—Opportunities and Training— <i>Rudolph H. Blythe</i>	264-274
Physical Chemistry at the Undergraduate Level— <i>Frank M. Gogan and T. C. Daniels</i>	274-278
Physical Chemistry on the Graduate Level— <i>C. B. Estabrook</i>	280-284
The Importance of Physical Chemistry in the Training of Pharmaceutical Chemists— <i>Arthur Osol</i>	284-290
An Approach to the Teaching of New and Nonofficial Remedies— <i>Henry M. Burlage</i>	290-292
Getting Along in a Career— <i>Robert A. Hardt</i>	293-301
Notes on Pharmaceutical Training in New Jersey before 1900— <i>David L. Cowen</i>	302-314
The Monograph Arrangement of U. S. P. XIII and N. F. VIII— <i>George E. Osborne and C. O. Lee</i>	315-319
Francisco Marroquín, Beneficent Crusader— <i>Georgianna Simmons Gittinger</i>	320-323
Editorials.....	324-329
The President's Page.....	330-332
The Editor's Page.....	333-345
Gleanings From the Editor's Mail.....	346-349
Notes and News.....	350-369
Miscellaneous Items of Interest.....	373-398

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The Earmarks of A Profession*

By LLOYD E. BLAUCH, Ph.D.

Specialist in Higher Education
U. S. Office of Education
Washington, D. C.

Provost Gladfelter, Members of the Board of Trustees, Dean Timmons, Dean Kendig, Members of the Faculty, Members of the Graduating Classes, and Friends:

It is an honor indeed to me to participate in this happy occasion. Increasingly I have come to know your splendid University and to respect it. I have always had great admiration for the ideals upon which it has been founded and which are today its guiding spirit.

I hope I may be pardoned for saying that the United States Office of Education was instrumental in your obtaining this fine building. Well do I remember the day when the request came to us in the Division of Higher Education to assist in preparing the justification for turning the building over to you. We wanted very much for you to have it and we were greatly delighted when the transfer was made. We now have much satisfaction in seeing how well you have equipped and are using it.

The Theme

As I walk along the street of an urban area today, I am besieged by an abundance of signs and advertisements, each announcing where I may obtain a particular ware or service. Among those contenders for my attention, and my small purse, are name plates of various kinds indicating

* Address at the Commencement, Schools of Dentistry and Pharmacy, Temple University, March 6, 1948. The Commencement was held in the auditorium of the new building which houses the two schools. Dr. Blauch is Assistant Director in Charge of Curriculum Studies, The Pharmaceutical Survey, American Council on Education. This article is being published concurrently in the *Journal of Dental Education*.

professional service. I find, for example, John Black, physician; William Brown, dentist; James Gray, pharmacist; Samuel White, attorney-at-law. (There is, of course, no meaning attached to these colors.) By way of translation they say: Medical service is rendered here by John Black; dental service is provided here by William Brown; pharmaceutical service may be had here from James Gray; and legal service is available here from Samuel White. So you see each plate tells two things—the type of professional service and the name of the individual practitioner who renders it.

When I need to have my teeth checked to learn whether they continue to be sound, I look for a dentist—a member of the particular profession that engages in that kind of service. But that is not enough. I know that the service is not rendered by the profession but by an individual. I also know that there is great variation among individuals with respect to their service. I want, therefore, not merely to have a dentist, just any dentist, I want a particular dentist in whom I have full confidence as to his competence and professional integrity.

My need for pharmaceutical service obviously presents a similar problem to me, with possibly some slight variation.

On this occasion I propose to deal with the two aspects of the dentist's and the pharmacist's sign or shingle: *first*, the profession—what are its earmarks or characteristics; and *second*, the individual practitioner—what manner of man is he, what quality of professional service does he render? The major emphasis, however, will be on the nature of the professions.

You may rightly think one is rather bold to undertake a discussion of a subject upon which so much has been written and spoken and yet which is so little understood. The subject is extensive and there is by no means full agreement concerning it. In undertaking it, I feel somewhat like the preacher down South who in trying to be very impressive, as well as

startling, concerning the theme of his Sunday morning sermon, began with the bold statement: "Brethren and sisters, today we's gwine to define de indefinable, and explain de in-explainable, and unscrew de inscrutable." Perhaps today we shall have to deal with something that approaches the indefinable, the inexplorable, and the inscrutable, but I make no such claim as the preacher.

Definition

The word "profession" may be used loosely or strictly. In its broadest import it is simply the opposite of the word "amateur." In this sense a person is a professional if he devotes his entire time to an activity, as against one who is only transiently or provisionally so engaged. The professional baseball player, dancer, and cook thus earn a livelihood by concentrating their entire effort on their respective vocations; whereas the amateur baseball player engages in the sport only during early youth or college life, largely as a recreation; the amateur dancer engages in the activity as a past-time, or hobby, and the amateur cook derives pleasure from preparing food on a camping trip or other similar occasion merely as an extra.

But such a loose use of the term "profession" is not sufficient for the serious purpose we now have in mind. A profession in the genuine sense requires something more than full-time engagement. We must admit that there is no one clear test that will enable us to draw a sharp line between what is and what is not a profession. Any dividing line must be somewhat arbitrary. Nevertheless the term clearly stands for something. That something is a complex of characteristics.

The dictionaries give us several definitions of a profession. One of the best is from the comprehensive *Oxford English Dictionary* which says a profession is "a vocation in which a professed knowledge of some department of learning or science is used in its application to the affairs of others or in the practice of an art founded upon it." The *Encyclopedia of*

Social Sciences defines a profession as "a vocation founded upon prolonged and specialized intellectual training which enables a particular service to be rendered."

Here we have the essence of a profession—a specialized service on a high intellectual level devoted to the well-being of people.

Until about 150 years ago only three callings— theology, law, and medicine—were commonly recognized as professions. They were called the "learned" professions because they were taught in universities. Since that time many others have acquired this status, and still others are in the process of being elevated to this lofty place in social recognition. With the change in number there has also been an evolution in the earmarks of the professions. It shall be our purpose to indicate some of those earmarks. Eleven of them come to mind.

Intellectual Character of Activities

One earmark that stands high on the list is the intellectual character of the activities involved in the work. Manual activities are not necessarily excluded from a profession; nor is the use of tools excluded. The physician is not the less the professional because his fingers feel the pulse (sometimes said to be the pulse!); the dentist is not the less the professional because he uses the drill and the forceps; nor is the pharmacist the less the professional because he uses the mortar and pestle. But in neither of these instances does the professional activity derive its essential character from its instruments. The instrument is an incident; the real character of the activity is the thinking process. The performance is on the intellectual rather than the instrumental level. The problems to be solved are difficult; they cannot be handled by the mere application of routine methods. If they could be so handled, the service would be rated as a trade.

Practical Nature

A second characteristic of professions is that they are definitely practical. They cannot be merely academic and

theoretic. The professional man must have a distinctly practical object. He has a concrete clear-cut task in each of his undertakings. The dentist, for example, is confronted with a pathological condition in his patient, the pharmacist has to compound a particular prescription. The dentist does not merely treat pathological conditions, he treats such conditions in individuals, each of whom presents a different situation. He is forced, therefore, to be intensely practical in his activity. This is merely another way of saying that the professions exist to perform highly specialized practical functions in the social order, usually for particular individuals or groups, but sometimes for society as a whole.

Specialized Intellectual Technique

The third earmark of a profession is a specialized intellectual technique; that is, a systematic and orderly procedure used in dealing with the particular problems which the profession is called upon to handle. Such a technique is acquired through prolonged training. So significant is this characteristic that it is sometimes referred to as the chief distinguishing and overruling feature of a profession. Despite differences of opinion about details, the members of a given profession are pretty well agreed as to the specific objects which the profession seeks to fulfill and the specific kinds of skill to be used in attaining those objects.

Techniques rest upon knowledge derived from the study of natural science or from the study of human institutions. They are developed in part from raw materials derived from one realm or another. In other words, back of and supporting the techniques or technical processes employed by a profession lie basic fields of study and inquiry. For example, dentists do not merely learn how to put fillings into teeth. That is a technique which they employ to deal with certain types of pathological conditions. In order to employ the technique intelligently they study anatomy, physiology, chemistry, physics, and other basic sciences. Likewise pharmacists do not learn merely how to mix certain ingredients to com-

pound a prescription. They study physical sciences and biological sciences in order that they may compound the prescriptions properly, check errors, understand dosage, and advise health practitioners concerning the uses and effects of drugs. Techniques which do not rest upon such comprehensive study, although they may be of useful service, cannot be said to be professional in character.

Independent Judgment and Individual Responsibility

A fourth earmark of a profession is that its practice requires the use of independent judgment and the assumption of large personal responsibility. This characteristic arises largely from the intellectual character of the work; for in all intellectual operations the thinker takes upon himself a risk. The professional is not under orders. He is not just a hired employee who must do as he is bid. Though he be cooperating with others, though he be engaged in teamwork rather than individual work, his responsibility is none the less complete and not less personal. He stands or falls on the success of the outcome of his decisions.

Research and Creative Work

Fifth, any profession that is worthy of the name in modern times engages in and supports research and creative activities in its field of service. It cherishes its imaginative minds and creative talent. Systematic and persistent effort to extend the boundaries of knowledge and develop new processes of service is a basic factor in the development of a profession. The stimulating influence of such creative work inspires the professional and keeps him from stagnation. This is not to say that each individual carries on extensive creative work or engages in research on a large scale, but the profession as a whole provides for it. The profession must resort to the laboratory and the seminar for a constantly fresh supply of facts; it is the steady stream of ideas emanating from these sources that keep professions from degenerating into mere routine, from losing their intellectual character.

Thus the profession renews its strength, inspires confidence in those it serves, and offers increasingly useful and satisfactory service. The fruits of inquiry are indeed essential foods for proper nourishment and full growth of a profession.

Organized Literature

Sixth, every modern profession has a well developed body of literature that contains the principles and facts on which the practitioner bases his activities. In a profession there are no trade secrets; ideas and processes are not patented. The discoveries are published so they may be shared by all and become the common property of those who are able to use them. They are freely given to the world in the interest of a better service to humanity. So significant is the literature, that great effort and substance are expended to support it.

Superior Personnel

Seventh, professions attract capable well-educated personnel—a personnel that is considerably above the average. In fact no calling can attain professional status if its practitioners are persons of mediocre or inferior ability. In general, professionals are a clearly marked group. Moreover, they guard rather jealously the gates of admission to provide reasonable assurance that only “good” people may enter, that is, persons of intellectual capacity and personal integrity. They go a step further in that they often urge young people of ability to join the profession. No doubt some of you have chosen your course because a dentist or a pharmacist, noting your ability and character, thought you would be a credit to his profession and he therefore urged you to join up. An intellectually capable personnel is then a distinguishing feature of the professions in our time.

Schools on the College and University Level

Eighth, in view of the intellectual character of the work of professions, it is to be expected that they would have schools

on a high educational level. The extended period of training, next to the use of an intellectual technique, is perhaps the most pronounced characteristic of a profession.

In the typical evolution of professional education there have usually been three stages—(1) apprenticeship training, the young man associating himself with a recognized practitioner who became his preceptor and mentor; (2) the proprietary school established by a member or a group of the profession who operated the school for profit; and finally (3) the university school or a school offering training similar to that afforded by the university. In these latter institutions of higher learning the vast and complex body of knowledge of the professions is organized and presented in an orderly, continuous, and systematic way by well-trained teachers.

Typically in our nation these great institutions play an increasingly significant role in determining the character of the professions. First, the schools either open or close the gates of the professions to those who want to enter. This fact has recently struck us with great force as we have noted the large number of young people who knock at the doors of professional schools but find the doors closed because the rooms inside have already been filled.

Second, the schools determine what principles and techniques the future members of the profession will learn, what professional attitudes they will develop, what ideals of service they will espouse. Third, the schools either place, or refuse to place, upon the students their stamp of approval, in the form of a degree, which is a virtual passport to the promised land. And lastly, the professional schools carry on a large share of the research and other creative activities, the results of which vitalize and renew the professions.

Truly the schools of a profession are in a strategic position; to a very large degree they make the profession in our times. There can be no great profession without great professional schools.

Self Organization

Ninth, a profession is a brotherhood—almost a guild. Professional activities are so definite, so absorbing in interest so full of duties and responsibilities, that they completely engage the time and effort of the practitioners. Consequently, the social and personal lives of professional men and of their families tend to organize around a professional nucleus. We find then that in a true profession there is considerable group cohesiveness. Generally this spirit results in some sort of organization or association. These groups are formed for several purposes, such as to advance the profession and the interest of its members, *and* to protect the profession from incompetent practitioners. Sometimes they become exceedingly reactionary, defending the status quo and opposing all progress. On the positive side they are a strong force for progress when managed by persons of imagination and social vision.

Social Regulation

Tenth, professions generally are characterized by some form of social regulation. This may take one or both of two forms—either regulation by voluntary associations, or regulation by the State.

Voluntary regulation is usually based upon an ethical code which is recognized by the profession and the public. Students of this matter inform us that nowhere have standards of professional ethics been formulated in codes so extensively as in the United States. Here they date back more than a century. The American Medical Association adopted a code of ethics as early as 1848 and has since then revised it several times. The first code of ethics in pharmacy was apparently that adopted by Philadelphia pharmacists in 1848. Four years later (1852) the American Pharmaceutical Association agreed upon a code of ethics. The dental profession also has a code of ethics whose origin dates back a long time.

So great is the concern of the public for some of the professions that it has placed them under State regulation. This has been done in cases where the service rendered is vital, such as in medicine, dentistry, pharmacy, and veterinary medicine. It has also been done for professions, such as law, where the service is fiduciary or confidential to a large degree. Furthermore, it has been done for such callings as teaching, where the direct public interest is large.

These forms of regulation help to keep professional practice on a high level. They protect the public from the quack, the charlatan, and others who would prey upon people when they are in need of expert service. These forms of regulation, both voluntary and public, likewise protect the competent and honest practitioner from competition with the incompetent and the unscrupulous.

Social regulation of some form or other is then a distinct feature of the professions.

General Education

We come now to the last of the eleven distinctive characteristics of professions. Those so far mentioned refer primarily to the application of specialized techniques to service for humanity. I now make bold to suggest another earmark which is somewhat different in character from the ten already named. I refer to a fair degree of general or liberal education. This characteristic, I realize, is an achievement in some professions and largely a hope in others. But progress is being made in this direction. More and more, the idea is coming to prevail that professions should be practiced by educated people, not by people whose higher education has been limited to the acquisition of specialized techniques.

There are several reasons for this attitude. First, it is generally believed that professional service is improved by the addition of a considerable amount of general education to the specialized professional training.

Second, the professions operate in a social environment. They have definite relationship to it; they need to understand it. In recent years I have listened to many discussions of the social relations of the professions; sometimes the discussions were most intelligent and enlightening, but alas! sometimes they were quite the opposite. Surely professional people should learn to deal intelligently with their social relationships.

I may say, however, that the most impelling reason why a sizeable amount of general or liberal education should characterize the professions arises from the nature of modern life. Let me explain.

Professionalism is not without serious social consequences. The trend toward highly specialized vocations in our occupational life is resulting in deep cleavages in our society with a resultant lack of unity and concern with the affairs of society as a whole. The professions tend to draw into them a large share of the intellectually more capable people. In these fields the educational and the professional activities are highly specialized, and the practitioners tend to lose concern with the broad world of public affairs except as their immediate interests are involved.

Who then is left to deal with the great social, economic and moral issues that affect all of us? Are we to leave these matters to the people of mediocre capacity? That may easily occur as increasing numbers of our superior people engage in highly specialized callings such as the professions. Can we afford to let that happen? Certainly not.

The greatest problem that confronts all of us today is *not* how can we obtain improved professional service, important as that may be. Rather it is, how can we manage to survive in this modern age of great tragedy—an age with overwhelming social and economic problems and with deadly wars? These are the things to which all intelligent people must give

attention. We need to cultivate *all* our brains to deal with them. Professional people cannot escape responsibility. They must help to carry the burden in these more general problems. I need not tell you, therefore, that we must make certain that our professional people of the future shall secure enough general and liberal education to enable them to bear their share of mankind's load and to interest them in doing it. A sizable amount as represented by at least a minimum of two years of college, must be an earmark of the professions. Certainly more would be highly desirable.

Such are then some of the characteristics of the professions. Let me enumerate them: (1) intellectual character of the activities; (2) practical nature of the activities; (3) specialized techniques whose mastery requires long time; (4) independent judgment accompanied with corresponding individual responsibility; (5) research and creative activities; (6) a body of specialized literature; (7) a superior personnel; (8) schools on the college and university level; (9) social cohesiveness and organization of those engaged in the calling; (10) social regulation; and (11) a considerable amount of liberal and general education. There may be some overlapping in these characteristics, but each of them stands for something that is a little different from the others.

I suspect that you recognized a number of these characteristics before you chose to become dentists or pharmacists, and I presume you have discovered others of those enumerated as you pursued your study during the past four years. All of them will become more real to you as you follow your respective callings. These characteristics will take on increased significance for you as you live the life of a professional among your fellow men.

The Individual

Let me now say a brief word concerning the other half of the sign with which we began. I refer to the name of the individual on the plate over the office or the shop; that is, to

William Brown and to James Gray. There are great differences among the practitioners of a profession. The sum of those differences for any one individual is what distinguishes him from other individuals; they constitute what we call his style.

As one who needs a professional service, I am greatly concerned as to the individual from whom I can obtain it. I want to be sure it is of high quality—the best that can be provided in the present stage of the profession. I have to place myself in the hands of William Brown or James Gray. Everything depends on him, provided I cooperate with him fully, as I most certainly shall.

But I need not carry this point further. Your school has, over the past four years, educated you concerning the moral obligation to fulfill your part to those whom it will be your privilege to serve, to devote yourselves wholeheartedly, competently, and without stint to serving them well.

Well do I remember one Sunday when in college I attended the evening vesper service. The address was given by a young man, J. W. Shank. On leaving the hall after the meeting, I met the dean of the college and remarked to him how good the address was. I shall never forget his reply. He said: "Whatever Shank does is well done."

I hope you shall always covet that reputation for yourselves. There is no greater reward than the inward satisfaction that comes from service to others that is well done.

L'envoi

You are joining a noble company—two noble companies—who are serving humanity well. It will be your part to conserve the honor and advance the cause of those professions, and, above all, to remember in your practice your duty to humanity as well as to yourself. I hope you will enjoy the years, ahead, and I wish you Godspeed.

Research — A Never Ending Human Endeavor

C. A. ELVEHJEM

University of Wisconsin

I imagine every individual in the world has a slightly different concept of research. Some may still believe that one merely needs to shut himself in his laboratory and after some time he may make a fundamental discovery as did Faraday or Pasteur. At least the American public does not need to be convinced of the importance of research. The lowest income group today enjoys luxuries and health advantages which could not be purchased with any amount of money 50 years ago. Incidentally, the expectation of life at birth among American wage-earners established a new historic record last year when it passed the 65 year mark. Much of this has been due to contributions of science.

As a result of the many new scientific developments essential to the successful prosecution of the war our statesmen and politicians have become science-conscious. The support of research may actually win votes. The devastated countries are giving priority to the reestablishment of research facilities and the training of research workers. Workers who have been isolated for many years are traveling to research centers for retaining at government expense. The Indian government is sending 500 graduate students to the United States each year.

However, let us not be disillusioned; too much interest by the public and too generous contributions may be as bad as too little interest and meager contributions. There is something peculiar about the spirit of research and what research can do. Many workers have and will continue to do research for the fun of it. It has been said that a researcher is a person who does not know what he is looking for but he is not happy until

*Read at the joint dinner of the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy at the 1947 meeting in Milwaukee.

he finds it. It is true that we must recognize that science exists for man and not for itself alone. Sir John Orr has said that every advance in knowledge which gives man new powers over nature inevitably brings about changes in the structure of our society. However, lasting changes produced by scientific research must be in mans' mind. Therefore, if we are to accept these new findings, we must have a balance between research work in many different fields.

This undoubtedly suggests that a central government should have some control or direction over the kind and extent of research to be done. This course was taken during the war and cooperative research was highly essential in order to make more rapid progress. The advantage of such a progress at least for short periods of time was clearly demonstrated. However, all of us connected with any of these programs know how rapidly scientists retreated from these programs as soon as the war emergency ended. It is also apparent that attempts to establish government support of scientific research and development have not had any easy road. I gather we will have additional arguments between statesmen and between scientists before a satisfactory National Science Foundation is established. L. C. Dunn has described the situation in the country very well. "Science has been a hardy plant which grew where and how it could, thriving in the comfortable greenhouse of a research institute, or turning ample fertilizer into real fruit in an industrial laboratory, or in the more usual case struggling for sustenance in the thin soil of colleges and universities, occasionally enriched by temporary growth stimulants from a foundation or private donor." Apparently many scientists still favor tilling the thin soil or marginal land perhaps with some fertilizer. It is true that the scientist must be free to grow and change in ways determined in part by the discoveries of science itself. Support without this freedom would mean complete failure. We stand today at the crossroads—will we have greater progress, great cooperation among workers and greater continuity in our research if much larger funds are made available for experimental work? Is the scientist merely old fashioned

and unreasonably afraid of the luxuries which may come with larger funds? Or is he rightfully concerned that fine laboratories, high salaries, etc., will not attract the proper kind of young men? Roger Adams, in discussing the outlook for science in the future, states "It must have financial backing from government, education and industry but above all, it must have youth - well trained, able and ambitious."

From a commercial point of view we may use Karl Compton's statement, "By research today we can assure prosperity tomorrow in business competition." In the field of pharmacy you have been fortunate that advances in your own field and in many related fields have been most helpful to you in your own programs. The help has not been all in one direction since, as Kremers and Urdang have so clearly pointed out in their "History of Pharmacy," several pharmacists have made fundamental contributions to science. I understand that surveys indicate that 500 new teachers holding Ph. D. degrees in pharmaceutical subjects will be needed in the next few years and that pharmaceutical manufacturers will require nearly as many more.

As a member of an educational institution, I often try to visualize how we can best continue our graduate training so that we may produce the well trained, able and ambitious young men who will continue fundamental studies, who will fill the needs of industry and will undertake the necessary problems of a nation and the world whether it be problems of atomic energy or the prevention and cure of cancer. In order to attempt an answer to this question I should like to review very briefly some of the advances relating to vitamins and amino acids, a field with which I have some familiarity and you have considerable interest.

I am sure that vitamin research was not initiated at the beginning of this century in order that the pharmaceutical industry would be more prosperous during the middle of the century. The early pioneers were motivated by the single purpose of alleviating human suffering. When liver was given to relieve night blindness or fresh vegetables were used to cure

scurvy, the practitioner knew nothing about vitamins. He was interested in healing the patient. When Goldberger was called upon in 1914 to undertake studies on the cause of pellagra he knew very little about the disease, but within two years he showed tremendous enthusiasm over the possible value of a specific nutrient in the treatment of pellagra.

At the beginning of the century a few men had vision enough to suggest that analytical data alone did not represent the true nutritive value of foods. One of these men was Stephen Moulton Babcock. When he was at the Geneva, New York experiment station he was asked to make analyses of certain feeding materials used in a metabolism experiment with the cow. He was also asked to analyze the feces by the conventional method of feed analysis. When he finished and presented his results to the director they were unable to tell from the analysis which was the food and which was the feces. This shook Dr. Babcock's confidence in the evaluation of feed materials by chemical analysis alone, but he probably would not have tested his ideas had he not later had the opportunity to work in cooperation with Professor E. B. Hart. Dr. Babcock's scientific curiosity could have been satisfied equally as well in the field of theoretical physics, but due to happy circumstances he was given an opportunity to initiate some of the most important studies in the field of vitamins. I might add that he would have done one or the other or both, regardless of financial income or high priced equipment.

Animal experiments were started in many parts of the world. Bunge in Germany and Pekelharing in Holland used mice; Hopkins in England and Osborne and Mendel in the United States used rats; Eijkman in Java used chickens; and Babcock and Hart in this country used young calves. These workers initiated the animal experiments for many different reasons. However, they all led to the same important field and by 1925 many laboratories were undertaking systematic nutritional studies. All these studies were most intriguing to an ever increasing number of research workers and the studies gained momentum each year. Some wanted to know what hap-

pened during each deficiency and how the vitamin functioned in producing normal animals. Others wanted to know what a vitamin looked like. By 1930 there was no question about continuity or cooperation in this field. Those interested in function solicited the cooperation of histologists, physiologists and enzymologists. In fact, studies on vitamins have certainly contributed materially to more fundamental understanding of enzymes. Information gained in both of these fields has been applied directly in cancer studies and studies on abnormal growth.

Those interested in the chemistry of vitamins may have been stimulated to some extent by commercial interests, but in many cases the individual workers were awarded only the satisfaction obtained from the successful proof of structure of their vitamin. In 1928 Dr. George Barger made the following statement: "So little is known about the chemistry of vitamins—not a single one has been isolated with absolute certainty—that I have hesitated to include this subject among the applications of organic chemistry. The very extensive contemporary literature on vitamins which takes up much space in chemical journals devoted to biochemistry contain few chemical facts and very few that are thoroughly well established." Contrast this with the situation less than 20 years later when the synthetic production of individual vitamins ranges from one hundred thousand to one million pounds annually. During this period no one stopped to talk about science foundations. No one raised the question that there was failure to carry through on their research program.

With each new B vitamin isolated and synthesized workers were given an opportunity to find new and unrecognized factors. No one set up an extensive program to isolate the anti-pernicious anemia factor or to find a vitamin which might be effective in the treatment of this disease. Nevertheless, workers in perhaps a dozen different laboratories were actively studying new factors for the growth of microorganisms, for the growth and prevention of anemia in chickens and factors needed in rats when fed certain sulfa drugs. All these efforts led

eventually to isolation of substances that showed similar chemical properties. Large industrial laboratories stepped into the picture perhaps just at the right time and the results of these efforts led to the final isolation and synthesis of folic acid. No one spent any large amount of time arguing about patent regulations, but as the results were obtained industry did take out patent rights. Everyone may not be satisfied, but I am sure that the patents will be worked out just as satisfactorily as if extensive plans had been made previously.

Preliminary studies indicate that this folic acid is of tremendous importance in the treatment of pernicious anemia and related disorders. However, workers did not stop to see whether folic acid was 5, 50 or 100 per cent effective. They continued their studies, which were greatly facilitated through the availability of synthetic folic acid, to see if other factors existed. It now appears that such is the case and rapid progress is being made.

I could give many other examples, but let us consider only the more recent work relating to pellagra. It is just 10 years ago that nicotinic acid was recognized as the anti-pellagra factor and that clinical work clearly demonstrated its effectiveness in the treatment of pellagra. One might have stopped at this point thinking that the problem was completely solved, but this was not the case. With the information available several laboratories immediately attempted to study the metabolism of nicotinic acid to determine the human requirements and to study the interrelationship between nicotinic acid and other vitamins. From these studies has come the very interesting observation that there is a direct relationship between niacin and the amino acid tryptophane. Until this relationship was demonstrated the question always remained why the consumption of corn should increase the incidence of pellagra and why milk and eggs which are low in niacin were found to be effective in the treatment of pellagra in the early studies of Dr. Goldberger. I doubt that planned research programs would have encouraged this work since many at least thought that identification of nicotinic acid had clearly settled the pellagra problem.

Those of you that have had contact with the manufacture and sale of vitamin products know that hundreds of thousands of dollars went into control work on the final products. Most of the assays were made with animals which, of course, are very expensive. I did not see any concerted effort on the part of industry to remedy this situation immediately. Nevertheless, investigations initiated largely by workers in the fermentation field led to the observation that microorganisms needed certain vitamins. Some of the workers recognized that these bacteria might be used for the quantitative estimation of vitamins and in 1939 Snell and Strong developed a basal medium for *Lactobacillus casei* which was highly specific for the determination of riboflavin. These methods have now been applied to the estimation of a large number of B vitamins. The savings to the pharmaceutical industry must run into a very large sum. These methods have not only been useful for vitamins but within the past three years have been shown to be of tremendous value for the estimation of amino acids. At the present time most pharmaceutical companies are interested in the manufacture of protein hydrolysates and amino acid mixtures. I doubt that greater progress could have been made if extensive planning had been carried on previous to these studies. The excellent studies of Dr. Rose and the continuity of his work have established the quantitative requirements of these amino acids. The development of microbiological methods for the estimation of these amino acids will give much of the information necessary for the clinical application of the manufactured products. Thus research is never ending. As new findings are made, opportunities for extensive and more detailed investigations are possible. However, as these new findings are made the work becomes more complex, which requires more highly trained individuals and a greater degree of cooperation. This cooperation must, of necessity, be voluntary rather than directed. As more findings are made the discoveries have a greater effect on human society. In order to apply these findings in society bigger men, or in the terms of Herbert Hoover "the uncommon men and women", are needed. It costs more to find and educate the uncommon men and women than it does to educate common in-

dividuals. If these requirements increase we must find additional means of supporting research. Therefore, I believe our planning should be concerned with methods of making funds available as needed rather than planning the type of research to be done.

We need greater cataloging of results and greater reserves of information. Much of this is routine in nature and should be carried by industry that benefits most from the accumulation of this information. Some of the work can logically be done in educational institutions, but we must be careful that it is not overdone. Research supported by industries through scholarships, fellowships and grants has increased greatly in the last few years. In 1929, 56 companies supported 95 fellowships and grants. At the present time over 300 companies support over 2000 fellowships, scholarships and grants. If this is used for the training of young men or for stimulating fundamental research it is money well spent. It is interesting to note that a larger percentage of the money is now used for fellowships rather than for specific research projects.

It is logical ask research workers in academic institutions to study problems which affect the general public. Thus, support from the National Institute of Health, the Committee on Growth, and publicly supported foundations is very useful in stimulating research on such problems as cancer, poliomyelitis and related diseases. When routine work is carried on in universities we must be careful that sufficient time remains for our research staff to think about the more fundamental problems and the broader applications of their findings.

I doubt that we can alter the basic form of research very greatly although we can organize conditions which will facilitate great discoveries. One of the most important needs of our educational institutions at the present time is more laboratory space, more money for technical help and more money for modern equipment. Sufficient funds should be made available so

that the true researcher will not be handicapped by lack of space, equipment and technical help. However, the conditions should not be so luxurious as to spoil the ambition of our young workers. If these conditions are made available I am sure that that support for research will come when and where it is needed. Greater progress will be made when ideas are a step ahead of support rather than when the reverse is true.

Each worker, if properly motivated, recognizes that research is never ending, that his contributions lead to more problems which he must answer or someone else must answer. How else can research prosper?

Industrial Pharmacy—Opportunities and Training*

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During the past summer, while in search of research pharmacists, I had the opportunity to contact most of the colleges of pharmacy offering postgraduate work. I was amazed at the small percentage of graduate students majoring in pharmacy, particularly at the doctorate level. In fact, there were only about 250 graduate students enrolled in all of the four major fields of pharmacy (pharmacy, pharmaceutical chemistry, pharmacology, and pharmacognosy). This is not half as many as are needed by industry alone! Besides, a large proportion of these students are needed, are better qualified for, and should be encouraged to go into teaching. Furthermore, most are majoring in pharmaceutical chemistry (the majority doing their work in chemical synthesis) rather than in pharmacy. I hope a very critical analysis can be

* Much credit and thanks are due to the Industrial Pharmacists: A. J. D'Angelo, Smith, Kline & French Labs.; R. L. McNeil, Jr., McNeil Labs. Inc.; Dr. L. C. Riesch, Wyeth Inc.; P. W. Wilcox, Sharp & Dohme Inc.; and to C. P. Frailey, Executive Vice-President, A. D. M. A.; and Dr. E. C. Elliott, Director of the Pharmaceutical Survey—for data and helpful suggestions.

*Read before the subsection on Pharmacy of the American Association for the Advancement of Science, December 27, 1947.

made to determine if more emphasis should not be put upon post-graduate training in pharmacy.

From examining our own organization as well as some others, I feel sure that there are as many, and as rewarding positions available to the industrial pharmacist as to the medicinal chemist. However, the survey conducted by The American Foundation for Pharmaceutical Education two years ago and an interim report of The Pharmaceutical Survey¹ of 9-26-47 do not indicate this high demand for pharmacists with post-graduate training.

The reasons for this seem to be:

1. The field is so new and there are so few pharmacists with this training that most manufacturers probably have not had the opportunity to realize their value in industry.
2. Confusion has developed from the different meanings applied to the terms pharmaceutical chemist, pharmacist (with post-graduate training) and organic chemist.

In academic circles, the term pharmaceutical chemist usually refers to one trained in the chemistry of synthetic medicinals while in industry, a post-graduate trained pharmacist is considered a pharmaceutical chemist, and the man working with synthetic medicinals—an organic chemist.

Because of this confusion, there is some doubt as to what the manufacturers questioned in the surveys wanted. I do not believe a true picture of the needs of industry can be evaluated until the meanings of these terms are defined on each questionnaire.

There are 18,000 undergraduate students now enrolled in pharmacy but most of them are taking courses preparing them essentially for the retail field. In order that they may qualify for licensure, their curriculum is nearly full of required subjects, many of which are far from essential for industrial work. In discussing the desirability of limiting pharmacy school enrollment, it has been suggested that many of the students could go into manufacturing. However, I do not believe these men will be suited for most positions in industrial pharmacy unless they have exceptional ability and the initiative to continue studying.

¹ The Pharmaceutical Survey; Preliminary Sectional Report, Committee Transmitted No. 6, 9-26-47.

This paper has been prepared with the hope that it will present a clearer picture of industrial pharmacy. We will:

1. Show the trends in pharmacy and the type of positions created.
2. Suggest certain courses that we have observed as being helpful in enhancing the man's chances of success in the various phases of industrial pharmacy.
3. Point out ways of implementing the development of an adequate number of industrial pharmacists.

In examining the trends during the past 15 to 20 years, we find that the products recognized in the U. S. P. and N. F. have shifted²:

1. From galenicals to organic chemicals.
2. From polypharmaceuticals to single therapeutic agents.
3. From tinctures and fluid extracts to tablets and ampuls.

Prescriptions increasingly tend toward scientifically created, carefully standardized preparations with a specific physiologic action.

Two recent prescription surveys show between 68 percent³ and 79 percent⁴ require no compounding. Products to fill these are being developed and manufactured in ever increasing numbers and volume by the pharmaceutical manufacturer.

This shift has resulted in the creation of new vocational fields—pharmaceutical research, development, and engineering. Market research—an important operation with most major pharmaceutical manufacturers—also offers new opportunities for the pharmacist. Control and sales activities, including professional service, have greatly expanded.

An analysis of the work of each of these fields will do three things:

2. Justin L. Powers, *J. A. Ph. A. (Pract. Ed.)* 7, 436-39, October, 1946.
3. Personal communication covering a suburban Philadelphia Prescription Pharmacy Survey in January 1946 of 2,355 prescriptions.
4. Dr. Henry M. Burlage, *American Druggist* 110, 62-63, October 1944.

1. It will assist the student to decide his primary interests.
2. It will aid the educator in formulating his courses and guiding the student.
3. It will give both a better idea of the potentialities of the various fields.

Let us look at the whole field of industrial pharmacy before considering the individual divisions. A manufacturing pharmaceutical laboratory is like a large family. It is made up of many individuals, each doing interrelated jobs requiring varying degrees of specialization. The success of the company depends on teamwork and the care and thoroughness with which the jobs are thought through and executed. There are, of course, certain basic qualifications a man must have in order to succeed. The emphasis on any one of these will vary with different positions. Because such qualifications are even more fundamental than the man's formal training, they deserve mention here. These attributes are:

Ability to cooperate with people, and to train and guide subordinates.

Comprehensive scientific knowledge, and ability to apply it.

Judgment in assigning the proper importance and relationship to the various elements of his work.

Capability of expressing thoughts clearly and concisely, orally and in writing.

A high standard of professional and moral ethics.

Determination to advance through diligent application of one's skills and the drive that comes with the thrill of accomplishment or discovery.

The number of pharmaceutical personnel has increased in nearly every company. Within the past ten years, several houses have had an overall increase in excess of 300 percent, with over 800 percent increase in pharmaceutical research. At the same time, the quality of the personnel has improved, as well as the responsibility delegated to it by management. Almost unlimited possibilities are present for advancement within the industry in either the technical or administrative branches. They will be governed largely by the man's ability and initiative.

Now let us consider the individual fields:

A. Pharmaceutical research creates new products. More specifically, this embraces the incorporation of one or more therapeutic ingredients in such a way as to provide:

1. A form that will insure uniform dosage.
2. Availability of the medicament to the body at optimal rate.
3. A vehicle having good patient acceptance.
4. A product stable for at least two years.

The work involves formulation, establishing the stability of the product, and supplying experimental material to research clinicians who are evaluating its therapeutic properties. The research pharmacist also establishes the specifications and methods of analysis for the raw materials and finished product.

All medicinal preparations should go through the pharmaceutical research and development phases, whether they represent a new therapeutic agent developed by chemical synthesis or a new pharmaceutical form.

The latter may be a preparation having superior properties of consumer acceptance, greater stability, better availability of medication; or it may be a scientific combination of ingredients in which the second agent augments the main ingredient or overcomes its undesirable side effects.

All of these constitute a fertile field for pharmaceutical research. This becomes very evident when one considers that 1,428 new products have been developed within the past five years and that only a few new medicinal agents—probably fewer than 100 in all—have been discovered. Examples of some of these pharmaceutical advances are:

1. A palatable, stable suspension of sulfonamides particularly suited for administration to children.
2. Combination of a vasoconstrictor with an antibiotic so that the latter could better reach the congested areas in the upper respiratory tract.
3. The development of water miscible emulsion bases for ointments, having superior therapeutic value and better patient acceptance.

To do these jobs effectively, without supervision, the pharmacist must have a "flair" for, and have acquired a technic for carrying on research. He also needs a broad fundamental knowledge of the basic sciences including physical, organic, biological, and analytical chemistry, pharmacology and statistics. He must be able to anticipate and fulfill the consumers' desires regarding flavor, texture, and other pharmaceutical qualities of the product. While a B.S. in Pharmacy has the basic background and can sometimes qualify as an independent research pharmacist after taking additional courses, many find that the demands of the necessary evening school work, their job, and normal outside activities are too heavy when they all exist at once. They then quit taking advanced study. Therefore, we strongly urge men to continue with graduate training immediately upon completion of their undergraduate work.

Finally, an imagination and a high capacity for applying fundamental findings, together with a personality adaptable to teamwork, are essential for success in the pharmaceutical research field.

B. Pharmaceutical development basically covers the transition phase between research and production. This involves the development of technics of compounding and selection of the type of equipment to be used in production, and the manufacture of small batches to prove the suitability of the processes devised. It may also include the formulation of dosage forms that do not involve research. This work may be the function of a separate Development Department—or be under the direction of the Research or the Production Departments, or divided between the two—depending on the size and organizational structure within the individual company.

The training may be like that of the research pharmacist or the pharmaceutical engineer or a blend of the two. It should certainly include ampul production and small scale manufacture.

C. The pharmaceutical engineer is one engaged in production or its supervision. There are several outstanding qualifications required for success in this field:

1. A knowledge of the chemistry and pharmacology of drugs, and particularly a knowledge of, and respect for, sanitary conditions and caution in the use of potent ingredients.
2. An understanding of the unit processes, equipment design and heat exchange that the chemical engineer deals with.
3. The appreciation of production planning, cost accounting, and time-and-motion study of the industrial engineer.
4. The happy faculty to deal smoothly with people.

This is such a broad field that it seems to me the candidate might better start with a special curriculum at the junior year than to take those courses necessary to qualify for licensure. If he is to complete his B. S. in Pharmacy first, he will probably only have time, during his graduate work, to take selected courses in the subdivision of the field for which he thinks he is best qualified. If he wishes to qualify for an M. S. degree, the 8 to 12 hours normally allowed for a research project usually can better be devoted to course work. If he continues to the Ph. D. level, a research project would be included.

Some of the problems that arise in manufacturing—which the pharmacist or chemical engineer, who now does this work, has not been trained to handle—include the large scale production of ampuls, the preparation of emulsions and colloidal suspensions in batches of several thousand gallons, the manufacture of effervescent salts in large batches, and the drying problems associated with tablet granulating.

Due to the varied jobs that the pharmaceutical engineer must handle, top premium is now, and probably always will be put on common sense and mechanical ingenuity.

D. Market research is a rapidly expanding field. In fact, in the company with which I am associated the Market Research Department is as large as either the pharmaceutical or organic research units.

While this is essentially a business field, market research includes surveys and studies of market trends which require a knowledge of therapeutic uses of substances. Furthermore, it would seem that a closer understanding of the pharmacists' and physicians' problems would be helpful. If one is interested in this work, he will find it helpful to take special marketing courses on completion of his pharmaceutical training. However, he may prefer employment for a time to learn more about the nature of the work and then take extension courses at a University Business School.

E. Control, in its more limited meaning, refers to the physical and chemical examination of all raw materials and final products to insure identity, purity, and strength.

With the increase in use of potent drugs and the concomitant tightening of controls, all manufacturers have expanded their control facilities. Even the small companies now are establishing their own analytical laboratories. The authority of the control chemist has also been increased. In most companies, the control department serves in a broader capacity and is set up apart from production, and equal to it, being responsible only to top management. In this case, it usually is responsible for issuance of formula cards, labels, plant hygienic conditions, *etc.*

The control chemist should have basic training in pharmacy—plus advanced work in instrumentation, statistics, qualitative and quantitative organic analysis, and microanalysis. Chemical microscopy is also helpful, particularly for qualitative tests.

I believe course work is more important than the equivalent number of hours allowed for a research project at the M. S. level.

F. Sales, either physician-contact (professional service) or calling on the druggist, has always been the phase of industrial pharmacy employing the greatest number of pharm-

aceutically trained men. It still does. And it may even expand, as more companies lay greater stress on "Specialties". Obviously, enjoyment of personal contact work and ability to sell are the major factors if one is to succeed in this field. In addition, the prospective graduate should have a well-rounded technical and cultural background. He will also find additional pharmacology and physiology very helpful.

We have discussed the work and qualifications required for the individual positions. It is necessary to integrate these into a sound educational program. Industrial men know what special training is necessary for their particular fields, but, not being educators, must rely on the schools to develop the best possible curricula. The pharmaceutical industry does not expect men trained for particular jobs—as tablet men, elixir formulators, *etc.* It prefers graduates to have a sound fundamental background and be, above all, trained to think and apply that knowledge. However, the branches of pharmacy are as diverse as those of chemistry, and just as a chemist elects to be a biochemist or a physical chemist, we believe a pharmacist should plan to be a sales, research, or production man in the field of industrial pharmacy.

There are a few sentiments or observations held by many persons in the pharmaceutical industry, and we hope it will be constructive to voice them here.

1. It is believed that there is some unnecessary duplication of subject matter in different courses; *e. g.*, specific gravity being covered in pharmacy, mathematics, and physics.

A careful study of the context of the entire curriculum might eliminate this duplication. Desirable new material might be introduced into existing courses, or, if the investigation made it possible to combine some courses and delete others, important electives could be offered in the third and fourth years.

2. The curriculum should be such that a man can enter graduate school without making up courses.

For example, many pharmacy schools do not give a mathematics course acceptable for entrance into graduate schools. Furthermore, the candidate needs such a course as a prerequisite to physi-

cal chemistry, an important course for any of the technical positions in industrial pharmacy.

3. While the undergraduate course usually gives a good background for the various industrial fields, it is more important that the man have the specialized work which he can use in his particular field than some of the courses included in the present retail curriculum.

If the addition of desired courses, to those which he now studies for a B.S. degree in pharmacy, should so prolong the academic phase of his training that he would get discouraged and quit school before attaining adequate specialized knowledge, then it would be better to delete those that he now studies which are least useful to industrial work.

While possession of a registered pharmacist license has some advantages, the candidate should not take courses just to qualify for licensure. Many teachers still feel that the man should get his license to have "something to fall back on in depression." Today, the industrial field can give a man the same or better security than the retail field. Possibly the first two years should be common for all pharmacy students, and specialization start after this. It is very desirable that some cultural studies be included. They give a man a broader and more appreciative outlook; thus, he can both enjoy life more and better serve his fellow man.

4. The rigid screening of entrants into pharmacy school should be continued. Only those thoroughly qualified by mental ability and personality should be accepted for graduate work. Those who are qualified should be encouraged to take advanced studies if they wish to go into industry.

5. Enough men are needed in industry so that two or three schools, preferably those with facilities for graduate training on a broad scale, would be justified in establishing planned curricula along the lines suggested.

In summarizing, I suggest three things be done in order to—help the student get into the right field, enable the school to better serve the student, and aid the manufacturer in obtaining a better supply of adequately trained personnel.

The recommendations are as follows:

1. Each manufacturer make a critical analysis of all positions that might be advantageously filled by a man with pharmaceutical

training, both as to the nature of the work and the qualifications needed in the personnel. The information from these analyses should be conveyed to the schools, possibly through the Pharmaceutical Survey Committee.

2. Some schools, with graduate facilities, develop a curriculum specifically for industrial pharmacy. All schools initiate a program for vocational guidance.

3. The student, during his sophomore year, give serious consideration to his talents and preferences—so that with the aid of vocational guidance, he can select the field in which he will be most content and efficient.

Physical Chemistry at the Undergraduate Level*

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Although, at the present time, a minority of the colleges of pharmacy list physical chemistry as a requirement for graduation, it can be assumed that all accredited colleges include in their courses of instruction, irrespective of course title, various aspects of the subject of physical chemistry. It is impossible to correlate the subjects of physics and chemistry without teaching physical chemistry in some form; likewise, the development of the essential topics and principles of general chemistry requires consideration beyond the freshman year. Whether or not it is desirable to set up a special course entitled "Physical Chemistry" is an administrative problem that should not confuse the issue. It is the purpose of this paper to point out the essential nature of the subject-matter of physical chemistry, and to show how it may be combined into a single course that may effectively vitalize the curriculum.

The following considerations make it imperative for the pharmacy curriculum to include a systematic presentation of the fundamental principles of physical chemistry.

* Read before the Conference of Teachers of Chemistry at the 1947 meeting in Milwaukee.

1. An understanding of the mode of action and the availability of drugs on tissue requires a working knowledge of physico-chemical concepts. The British school of pharmacologists have gained their pre-eminence in the field largely because of their effective use of physical chemistry as a tool in the study of biological problems.

2. An appreciation of the importance of the shape and properties of molecules suitable for use in stabilizing emulsions is essential for the pharmacist. Hundreds of new synthetic agents have been made available for the purpose, and a number of these new compounds are vastly superior to the older classical surface-active agents. An intelligent selection of the proper surface-active molecule required for a given formulation cannot be made without a thorough understanding of the principles involved.

3. The basic concept of such properties as resonance, hydrogen bonding, and coplanarity of molecules will be more readily grasped by students who have had systematic instruction in physical chemistry. The importance of these properties for pharmacy students cannot be over-emphasized. Only by integrating these concepts is it possible to approach a rational treatment of modern biology and therapeutics.

4. An understanding of the significance of physical and physico-chemical measurements of such properties as viscosity, surface tension, molecular weights, freezing points and pH of solutions, optical density and activity, refractive index, *etc.*, is essential for a full appreciation of the literature of pharmacy. It is practically impossible to present adequately these important concepts in physics, or in other standard courses; therefore, additional work in physical chemistry may be regarded as essential.

There is hardly a field of study in courses in chemistry in colleges of pharmacy that does not have some bearing on the subject of physical chemistry. It might be argued that the more advanced topics in physical chemistry are beyond the capacity of the undergraduate. While in a certain sense this may be true, it is certain that the average undergraduate, if exposed to proper instruction in elementary physical chemistry, will develop an attitude of mind that assists him in acquiring and utilizing the concepts involved. Moreover, he will gain a working knowledge of subject-matter usually expected of him in other courses; he will be more sure of himself when dealing with problems of buffers, pH, equilibrium, and rates. He will

learn to correlate the physical properties of liquids that play such a vital role in the identification of organic substances. His knowledge of colloid chemistry will be broadened to the extent that he will no longer be utterly dependent upon the "cook-book" type of operation. The undergraduate student can be taught to appreciate the significance of electrical conductivity as a measure of concentration of ionic substances, and he can correlate oxidation-reduction potentials with ordinary oxidation reactions that he has learned in earlier courses.

To those who feel that physical chemistry is properly reserved for the graduate years it should be pointed out that there is an elementary phase of physical chemistry that must first be mastered in order to progress logically into advanced subject-matter. Those graduate students who attempt to master physical chemistry chapter by chapter as if it were a subject to be memorized, invariably fail to grasp the fundamental significance of their work. It is absurd for a graduate student to attempt to memorize the Debye-Huckel theory, for example, unless he has gained as an undergraduate a working knowledge of simple electrical conductivity.

Over a period of years we have developed a course in physical chemistry designed for junior students at the college of pharmacy. We are taking the liberty of presenting a brief description of the course, not because we feel that it is the only suitable or necessarily the best method of presenting the subject, but merely to point out our objectives and to define what we believe to be a suitable course in physical chemistry for our present pharmacy curriculum.

The most important objective is to present clearly those elementary principles of physical chemistry which have proved to be essential to a satisfactory understanding of laboratory methods. The course is divided into five parts as described in our laboratory syllabus.¹

1. F. M. Govan. *University of California Syllabus P T for Physical Chemistry* 100, University of California Press, California, 1945.

The first part of the course is intended to teach the student to think about chemical and physical processes in terms of equilibrium and rate of reaction. The laboratory work of this part of the course is selected to illustrate theory with simple practical examples.

Part two deals with the properties and states of matter. The chemistry of the colloidal state is given careful consideration, and subsequent discussions of the kinetic theory of gases, surface tension and viscosity of liquids, and certain properties of solids are developed to show their relationship to colloidal chemistry. In the laboratory the students are permitted to make and study several colloidal solutions. They have the opportunity to become proficient in the measurements of vapor pressure, vapor density, specific gravity, surface tension, viscosity and refractive index. An ultra-microscope and polarizing microscope are also available.

In the third section ideal solution laws and the colligative properties of solutions (namely the elevation of the boiling point, depression of the freezing point, vapor pressure lowering, and osmotic pressure) are related to each other and to the concentration of solute. Ionic solutions are considered in connection with colligative properties and isotonicity. The laboratory work is designed to illustrate the subjects mentioned above by means of laboratory measurements of practical significance.

Part four is devoted to a study of the influence of heat, light, and electrical energy on physico-chemical systems. Elementary electricity is reviewed during a discussion of the electrical conductivity of solutions. The subject of chemical thermodynamics, photochemistry, photometry and polarimetry are developed in connection with the laboratory use of a spectrophotometer, polarimeter, conductivity bridge, and potentiometer suitable for determining the pH of solutions with the aid of a glass electrode.

The fifth and last portion of the course deals with special topics. An attempt is made to outline the subject of atomic and molecular structure and to mention some of the developments in radioactivity of special interest in medicine and pharmacy. The laboratory work of this part of the course may be devoted to special problems, or the time may be used for the completion of laboratory work introduced in connection with other parts of the course.

It has been our experience that the above outline effectively serves for the presentation of those basic concepts in physical chemistry essential for the present pharmacy curriculum. It is understood, of course, that the subject-matter of elementary physical chemistry is widely used in other courses in the curriculum beginning with the first-year chemistry. However, only a very few students grasp and retain this information unless a conscious effort is made to review, systematize and clarify elementary concepts while laying the foundation for more advanced work.

U. S. Public Health Service to Commission Additional Pharmacists

Announcement is made of a forthcoming examination for the Regular Corps appointments for Pharmacist officers in the grades of Junior Assistant Pharmacist (2nd Lieutenant), Assistant Pharmacist (1st Lieutenant), and Senior Assistant Pharmacist (Captain). These appointments are permanent and provide opportunities to qualified pharmacists for a life career in a number of fields, including hospital pharmacy, pharmaceutical research, public health programs, medical supply and quarantine inspection. Entrance pay varies from \$3,391 a year for Junior Assistant Pharmacist to \$8,551 a year for Pharmacist Director, which corresponds to full Colonel. Retirement pay at 64 for this grade is \$4,950 a year with full medical care. For application forms and additional information write to the Surgeon General, U. S. Public Health Service, Washington 25, D. C., Attention Division of Commissioned Officers. Application blanks must be received at the Surgeon General's office not later than May 21, 1948.

Physical Chemistry on the Graduate Level*

C. B. ESTABROOK

University of Maryland

A famous scientist once remarked that "to talk about a subject intelligently one must be able to measure it quantitatively." Until quantitative physical and chemical data are available, our knowledge of a chemical reaction or a physical process is only half complete.

Problems in pharmaceutical or medicinal chemistry certainly are in as much need of being analyzed quantitatively as are those in organic chemistry, or any of the branches of chemistry or physics. For this reason, among others, it is just as essential for the pharmaceutical or medicinal chemist to have a strong background in physical chemistry as it is for the pure organic chemist.

Physical chemistry is the border subject between physics and chemistry, and it is very difficult at times to determine on which side of the border a given problem should be placed. As one of my former physics professors remarked at a recent APS meeting, "It is hard to tell our physicists from our physical chemists."

The purpose of the study of physical chemistry is to understand and to use the laws of physics and chemistry. Physical chemistry was first considered a separate branch of science some fifty years ago. It has continued to broaden its scope with new discoveries, and has become more exact as experimental technique has improved and as the chemist has learned to apply mathematics to his problems.

As physical chemistry has grown, it has become necessary for the chemist to become familiar with the laws of physics.

* Read before the Conference of Teachers of Chemistry at the 1247 meeting in Milwaukee.

Thermodynamics is, perhaps, the prime example. Thermodynamics, at one time, was just one of the theoretical heat courses taken by physics majors. However, since its serious application to chemical reactions, as discussed first in Lewis and Randell's book around 1920, thermodynamics has become of great importance to the chemist. The study of thermodynamics involves differentiation and integration, so that now it has become necessary for the chemist at least to have had calculus, and a course in differential equations would be of immense help.

Accordingly, the student should be well prepared in mathematics before starting physical chemistry. Our students have had differential and integral calculus. A few students take calculus concurrently, but that procedure is not to be recommended. In addition, the usual courses in chemistry and physics are a prerequisite.

In stressing mathematics, it is not the idea to make the course a maze of equations. That is not difficult to do; in fact the point can easily be reached where the physical principles being discussed are entirely eclipsed by mathematical equations. When that point is attained the student is thoroughly bewildered and the course is no longer one involving principles, but rather one involving the solving of equations.

In Baltimore the students taking physical chemistry are primarily graduate students majoring in pharmaceutical chemistry. They have varied educational backgrounds, but if they have had adequate mathematical preparation they usually do not experience too much difficulty.

Sometimes the question is raised as to the wisdom in giving students of pharmaceutical or medicinal chemistry the same course as is given to chemistry majors. Unfortunately, the idea is abroad that pharmaceutical chemists are of an inferior variety, so are not considered Grade A. As a case in point, several of our students have worked in one of the government research laboratories. These men were told on filing

their applications to omit the word 'pharmaceutical' from their application blanks using only the word "chemist." It seems that in the eyes of Civil Service, the prefix "pharmaceutical" immediately places the application on the level of a pharmacist mate, or lower. In spite of this handicap, these men were employed, and did very well. This particular case was all the more unfortunate, since the problem to which they were to be assigned was one involving fungicides, which is certainly of a pharmaceutical nature. Again during the revision of the last USP, the monograph on pH was sent by its author to a physical chemist for criticism. It was returned with several errors indicated. Upon noting the errors, the author's comment was "Well, it was good enough for pharmacists." We at Maryland do not believe that our graduate students are inferior, so that we require them to take the same physical chemistry course as is required of the chemistry majors.

In any course, it is the writer's opinion that fundamentals should be the focal point to which the students' thoughts should be directed. The writer has found that graduate students are just as much in need of fundamentals as are the youngest undergraduates. Often times an advanced course is apt to become so specialized that the fundamentals are completely overshadowed. Also it should be emphasized that such a course should be an important tool in research.

Our course consists of lectures, problems section, and laboratory work. In the lectures we first take up the properties of gases, liquids and crystals. The kinetic theory of gases, together with the Maxwell Distribution Law, are developed. Van der Waals equation is discussed in detail. There is, of course, the question as to just how far one should go with the mathematical development. If one goes too far, the fundamental idea is often lost, and if one does not develop the equations then the student is asked to accept a lot of statements on faith, a procedure which is unsatisfactory both to the instructor and to the really inquisitive student. Viscosity, surface tension, refractive index, optical rotation and polarization, electron dif-

fraction, benign important tools of research, are subjects discussed in detail. In the field of medicinal chemistry, optical activity is of special importance in connection with chemical structure stereoisomerism, *etc.* Quantitative energy relations are taken up in thermodynamics. Here the equations are derived. Thermodynamics is highly important in pharmaceutical and medicinal chemistry in connection with thermo chemistry, chemical kinetics, *etc.*

A study of solutions being of importance to any kind of chemist, considerable time is devoted to the discussion of their properties—such as the freezing point lowering, boiling point raising, and osmotic pressure.

Both homogenous and heterogenous equilibrium are taken up. This involves the law of mass action and phase rule, both of extreme importance.

A considerable time is spent on electrical conductance, EMF, cells, potential, *etc.* Electrical measurements are of great practical value so that the use of various electrical measuring devices is emphasized. In this connection might be mentioned the work of Beutner on the "Physical Chemistry of Living Tissues and Life Processes," an application of cell potential.

While colloid chemistry is of importance to the pharmaceutical chemist, in our course it is touched rather lightly, since a separate course is offered in this subject.

As quantum theory, atomic structure, and radioactivity are becoming more important to the chemist, more time than formerly is devoted to them. However, a separate course is also given in atomic physics which goes into these subjects in detail. Here we might mention tracer chemistry, which seems to have almost unlimited possibilities for the medicinal chemist.

However, time is the all important governing factor, so that one has to add here and cut there as circumstances demand.

In our problem section the student works various examples, it being our contention that one must actually go through the mechanics of working problems in order to understand them. Often problem working degenerates into substituting numbers into a formula and turning the crank, as it were. While a certain amount of number substituting is inevitable, nevertheless, an attempt is made to see that the student does not get into the substituting habit. Graduate students sometimes feel themselves above being assigned problems for homework. However, it has been our experience that a definite assignment is an excellent catalyst for promoting study and understanding.

The laboratory work is probably the most important part of the course, for it is here that the student is on his own, attempting to make an experimental set-up function properly. While the instructor is always available for consultation, the student is expected to set up the experiment and get the data, with but very little outside help. The laboratory experiments, 32 in number, are designed to follow the lectures, illustrating the fundamental principles. There are experiments on vapor pressure, viscosity, surface tension, solutions, refractive-index, freezing point lowering, boiling point raising, heats of neutralization, solution, and hydration, indicators and buffers, polarimetry, colorimetry, standard cells, use of various kinds of electrodes, and experiments using the spectrometer, electrophotometer, potentiometer, various kinds of bridges, and the pH meter. In connection with the laboratory work, the writing of reports is emphasized. Even graduate students often turn in very poor laboratory reports. Besides giving the student opportunity to express himself briefly, clearly and yet completely, it gives him the chance to analyze data, plot curves, derive constants from them, and to draw conclusions. Also the naming of units is stressed. Though they are graduate students they will still take down data without giving it a name.

While the above outline is not in any way thought of as a model course, and undoubtedly there are subjects which are

omitted or only touched lightly that should have more emphasis placed upon them, nevertheless the writer believes that such a course covers the fundamentals upon which a student may build by further study in special courses.

The Importance of Physical Chemistry in the Training of Pharmaceutical Chemists*

ARTHUR OSOL

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For several decades physical chemistry has been recognized as a fundamental subject in which instruction must be provided for students majoring in chemistry. Indeed, the committee on Professional Training of the American Chemical Society not only requires that physical chemistry be included in curricula which they consider for approval, but further stipulates that the subject be taught with emphasis on the rigorous derivations made possible by the application of the principles of differential and integral calculus. As a prerequisite to physical chemistry it is specifically required that the student shall have completed a 6-semester-hour course in calculus.

For students of the biological sciences a less intensive course in physical chemistry is generally provided; the emphasis on the approach through calculus is as a rule minimized. For students majoring in pharmacy, even when some measure of specialization in pharmaceutical chemistry is provided in the undergraduate curriculum, the training in physical chemistry is in the majority of schools incidental to other subjects.

* Read before the Conference of Teachers of Chemistry at the 1947 meeting in Milwaukee.

At the risk of incurring further objection from those who are already complaining that too much chemistry is taught in the pharmacy curriculum I believe that a formal course in physical chemistry should be provided not only for pharmaceutical chemists but for all students of pharmacy.

Anticipating the question, we may consider who is a pharmaceutical chemist. Some are actually pharmacists by the test of scholastic preparation who, either as undergraduates or subsequent to graduation, developed an active interest in chemistry; in some instances they may have had an opportunity to study more chemistry than is ordinarily provided in a pharmacy curriculum. Other pharmaceutical chemists are graduates in chemistry who subsequently specialized in investigations on medicinal substances; generally they have had no formal training in pharmacy. Because there are so many broad fields of specialization within the specialism called pharmaceutical chemistry it is no simple matter to decide what shall be the educational qualifications of a pharmaceutical chemist — especially to decide whether he shall be first a pharmacist or a chemist. I am inclined to believe that, as a generalization, it probably is immaterial whether he has been graduated as a pharmacist or a chemist, so long as fundamental courses of instruction in inorganic chemistry, organic chemistry, analytical chemistry, and physical chemistry with their recognized prerequisites, have been successfully completed. From the reports of several laboratory directors, from chemists working in many laboratories, and from my own experience, it would appear that the training in physical chemistry that a pharmaceutical chemist should have would require three hours a week of lecture and recitation instruction, and three hours a week of laboratory practice, both to be provided through two semesters. If desired, part of the laboratory work might be provided in a more advanced course in quantitative analysis, if such is available.

The approach to the derivations of physical chemistry through calculus appears desirable for pharmaceutical chem-

ists, principally for the general benefit to be derived from the rigorous methods of reasoning which this system of science inculcates. I do not believe, however, that the pharmacy student who plans to make his career in retail pharmacy, or any other field than pharmaceutical chemistry, should be burdened by this particular form of mental discipline; for such students a simpler approach to the broad concepts of physical chemistry is sufficient. There appears to be no valid reason why the pharmacy student who desires to become a pharmaceutical chemist should not have the opportunity to study first calculus and then physical chemistry in the four-year baccalaureate curriculum; certainly these subjects are more important than some others included in many pharmacy curricula.

What benefits are to be derived from the inclusion of physical chemistry in the curriculum of a student who is preparing to become a pharmaceutical chemist? Without doubt, the most important benefit — and probably the one most likely to be overlooked — is the rigorous mental discipline that physical chemistry can confer on the student. Serious study of physical chemistry can do much to avoid superficiality in thinking. In no other subject is there a better opportunity to learn how limited are the so-called "laws" of science and to see how easy it is to be misled by the many variables — both known and unknown — involved in the measurements of even the simplest experimental systems. The confusion in and meaninglessness of such unqualified statements as "the pH of Isotonic Sodium Chloride Solution is between 5 and 7" and "the pH of Ringer's Solution is from 5 to 7.5" and similar statements concerning unbuffered solutions is obvious to one who has seriously studied physical chemistry. To him it would be at least as important to say that the experimental error in a colorimetric determination of pH, as it is directed to be performed by the U. S. P. XIII, for example, may be as great as 2 pH units when unbuffered solutions are tested with indicators which are not isohydric, as it is to say that "the experimental error can be reduced to about 0.02 pH"

(Page 871, U. S. P. XIII). The determination of pH, while it may result in a very reproducible measurement, may at the same time have a high degree of error; certainly it is essential to know more about the subject than just to be able to match colors, or to turn a dial or two of a potentiometer. Inasmuch as a knowledge of pH is useful in so many of the processes of pharmacy and pharmaceutical chemistry there is presented in this one experimental technic an excellent opportunity to learn how very largely restricted and limited most laws and methods of science are, and how easy it is to arrive at erroneous conclusions even when the phenomena concerned are studied with the aid of instruments which readily permit of a high order of precision of measurement while the accuracy is all too often of a very low order. Here too is the opportunity for the student to learn a very important principle in discovering that a difference of 0.1 unit in duplicate measurements of pH is because of its logarithmic nature not nearly so good a "check" result as some would believe.

An examination of the new Pharmacopoeia, National Formulary, and New and Nonofficial Remedies is sufficient to convince one of the trend toward the utilization of physico-chemical methods in establishing the identity and quality of medicinal substances or of the reagents employed in the testing of drugs. The new methods which have been introduced in these compendia employ chiefly the photoelectric colorimeter and spectrophotometer, instruments which some workers believe rank second only to the balance and the buret in their usefulness in the chemical laboratory.

Reference to the specific substances to which physico-chemical tests are applied will serve to emphasize the importance of these tests. Such tests of the U. S. P. XIII will be discussed first. Carbachol Injection and Carbachol Tablets are directed to be assayed by determining the percentage of light transmission in an acetone solution of the choline reineckate obtained after alkaline hydrolysis of carbachol.

Digitoxin Injection and Digitoxin Tablets may for manufacturing purposes be submitted to a colorimetric control procedure in which the intensity of the orange color of a digitoxin-trinitrophenol compound or of the greenish-blue color of a digitoxin-ferric chloride compound may be measured in a photoelectric colorimeter and calculated, by reference to data obtained similarly from U. S. P. Digitoxin Reference Standard, to the amount of digitoxin present. The assay for Ox Bile Extract, and for Ox Bile Extract Tablets also requires a determination of the per cent of light transmitted by the colored derivative obtained by reaction between furfural and the ox bile acids in the sample under test. The official colorimetric control for Nicotinamide Injection and Nicotinamide Tablets likewise involves measurements of light transmission but the specification that this be done at 500 millimicrons requires a somewhat more elaborate apparatus than is generally employed for the other tests which have been mentioned. Desoxycorticosterone Acetate, Methyltestosterone, and Testosterone Propionate are each characterized by identification tests specifying determination of the absorption coefficient at a specified wave-length in the ultraviolet region; such a test will be recognized to have quantitative as well as qualitative significance. Effective January 1, 1948 the U. S. Pharmacopoeia has adopted a new Vitamin A standard by use of which spectrophotometric determinations of the vitamin A content of certain preparations may be quickly determined. By comparing the results of biological and spectrophotometric assays on this new standard the U. S. P. has established the long-awaited official conversion factor for calculating vitamin A content from spectrophotometric data obtained on products to which the physico-chemical method may be applied. Riboflavin, its Injection and its Tablets, are all quantitatively analyzed by a measurement of the degree of fluorescence of aqueous solutions of the vitamin. A similar fluorometric method is employed in the assay of Thiamine Hydrochloride and its official preparations, except that in this case the thiamine is oxidized to thiochrome, the fluorescence of which in isobutyl alcohol solution is measured.

The N. N. R. 1947 describes several tests in which light absorption is measured by means of a photoelectric colorimeter or spectrophotometer. Ethinyl estradiol, for example, is tested for identity and quality by determining the positions of both the absorption minimum and maximum with a specification of the limits of the extinction coefficient at the point of maximum absorption. Nitrofurazone, better known as Furacin, is examined by determining the absorption of light in the ultraviolet region for several different concentrations of its solution.

Most of the dyes employed in preparing the stains for use in the clinical laboratory are tested, according to specifications adopted by the National Formulary, spectrophotometrically. In these tests the determination of the absorption ratio is directed to be performed; this ratio represents the value of the extinction coefficient for a solution of the dye at a specified wave-length divided by the value of the coefficient at another specified wave-length. The ratio, in the case of substances which may have similar absorption curves, is considered to be more nearly characteristic of a given substance than is the single extinction coefficient.

This brief resume of the trend of the newer methods of testing official substances, while emphasizing the analytical applications of physico-chemical methods, might equally well have been focused on the application of the latter methods in research dealing with the synthesis of naturally occurring substances. In the synthesis of certain of the vitamins, for example, first proof of the identity of the ultimate synthetic product with the natural substance concerned was quickly obtained when the two products were demonstrated to have the same spectrophotometric absorption curves.

It is apparent why the emphasis on the newer technics in physical chemistry has been in the field of light absorption measurements; currently, at least, such methods are of the greatest interest and usefulness in the laboratories of

pharmaceutical manufacturers. In this discussion no attempt has been made to review all the physico-chemical technics that may be used by the pharmaceutical chemist. The purpose has been to show that already enough of these technics have been introduced—and several of them officially adopted—to represent such a sizeable proportion of pharmaceutically important procedures that pharmacy colleges can no longer think of physical chemistry as being primarily a chemist's subject. There seems to be no question but that the pharmaceutical chemist—regardless of whether he is a pharmacist or a chemist by the test of undergraduate preparation—should have adequate knowledge of physical chemistry.

An Approach to the Teaching of New and Nonofficial Remedies*

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Former students who have graduated and who are retail pharmacists have repeatedly, over a period of years, remarked to the writer that the information obtained in a course dealing with new and nonofficial remedies was of inestimable value to them. They stated that, owing to the rapid changes occurring in the marketing of new therapeutic agents, the course is becoming more and more important each year as preparatory training to the successful practice of retail pharmacy.

With the significant value of the course in mind, the author has, during the fifteen years that he has offered it, been constantly on the alert for ideas and suggestions which might make it more useful to the graduate and of sustaining interest. The method of outlining the course has been changed period-

*Read before the Conference of Teachers of Chemistry at the 1947 meeting in Milwaukee.

ically without complete satisfaction in the ultimate result in its presentation.

In the fall of 1946 a graduate, who had recently returned from service to his former position as field representative of a reputable pharmaceutical manufacturing concern, during a visit with the writer, emphasized the growing importance of such a course. He suggested that he felt it could be kept reasonably abreast with the products that were specialties by allowing the representatives of the various manufacturers to participate by presenting their products to the class.

It was agreed that the major portion of the course should continue to deal with the therapeutic agents embodied in the works: "New and Non-official Remedies of the American Medical Association" and "Accepted Dental Remedies of the American Dental Association" and these be supplemented by "Gutman's Modern Drug Encyclopedia and Therapeutic Guide," and current literature. Since the course consisted of thirty lectures it was decided to allow one third of the time for the representatives to present their products to the students.

The young man who had made the suggestion agreed to aid in contacting the representatives and to give the first lecture dealing specifically with "Detailing the Physician." A schedule was prepared for the representatives who agreed to participate. It was regretted that time did not permit more concerns to take part.

Each representative was reminded by letter of his scheduled program, the time allowed (fifty minutes), and the suggestion was made that his discussion be limited, as a trial, to five products that his company was detailing most vigorously. He was requested to submit ten or more questions covering the topics to be discussed from which a short examination might be prepared.

The writer was pleased with the cooperation received from the manufacturing houses and their representatives, with

the students' interest, and the quizzes and the results obtained from them. All the students made favorable comments and recommended that the scheme be tried for another year.

In conclusion, the instructor was gratified to know that, contrary to the student belief, the representatives are detailing many of the items now listed in "New and Nonofficial Remedies"; he feels that the course should be given more time than is now allowed in most schools to permit the inclusion of a greater number of concerns and to allow, further, for the showing of education films which cover some of the items discussed. The method serves as a practical way of demonstrating to the students trade packages and the literature pertaining to them. The writer feels that he has found the clue to the proper presentation of the extensive subject matter and recommends the procedure for trial by other teachers of the subject.

MEDICAL LIBRARY ASSOCIATION EXCHANGE SERVICE

Plans are formulated for extending the Exchange services of the M. L. A. to European libraries. The exchange is being made through the Libraries Section of UNESCO. Plans for the receipt of material from the libraries of Europe will be announced later.

In the extension of this Exchange service to Europe a certain amount of the literature of medicine and the allied professions will find its way to Europe that perchance should have been shelved in some pharmacy school library. Moreover, it is not likely that much good Pharmacy library material will be forthcoming from Europe.

If our schools of pharmacy are in need of any of the material which is being made available through the Exchange service of the Medical Library Association, it seems too bad for it to be sent to Europe.

The Exchange service of the M. L. A. was presented to the Association at Milwaukee as a part of the report of the Committee on Libraries and may be found on pages 516 and 725 of the *American Journal of Pharmaceutical Education* for 1947.

Those who are interested in first hand information about the Medical Library Association and its Exchange services should write to Mrs. Eileen R. Cunningham, Vanderbilt University, School of Medicine, Nashville, Tenn., president of the M. L. A.

Getting Along in a Career*

ROBERT A. HARDT

Director, Sales and Advertising, Hoffmaun—La Roche Inc.

Students in a school of pharmacy are usually fully occupied with their studies and examinations. Nevertheless, they can and usually do find some time to think about the career which lies ahead of them. Even the freshman year is not too early for thoughts of that career, whether it is to be as a retail pharmacist, a teacher, a hospital pharmacist, or in the pharmaceutical industry. The lessons learned from textbooks and from teachers will help in that career. Unfortunately, however, the knowledge gained from studies in college is not always the complete answer to progress and success. The student must think of two aspects of his training:

1. The knowledge he gains of his chosen profession.
2. The knowledge he gains of himself.

It is this second aspect which I wish to discuss with you frankly today.

All too often college graduates embark upon a career with little or no knowledge of how to work with people. In no job is it possible to make satisfactory progress without almost daily contact with personalities - business or professional associates or the public at large. It is assumed that you have a basic liking for people or you would not have chosen the study of pharmacy. Liking people presupposes an aptitude for getting along with people. But I fear that we assume too much when we conclude that because we like people we can get along with them in the most satisfactory and productive way.

Several studies have been made to determine why people fail in business or professions. We dislike negatives, but

* Abstracted from an address before the student body of the School of Pharmacy of the University of Arizona at Tucson.

frequently we must eliminate the negative side before we can develop the positive elements of our personalities. Let us take a look at some of the reasons why people fail in business or professional careers and sometimes even in their academic work:

People Fail Because They Waste Time

The cab driver who brought me out here is an authority on horse racing. He admitted as much to me and he convinced me that he knew all the tricks of the track. He has become so proficient in the art of analyzing the racing form and is so successful in his betting that he now loses as little as \$6 in one day. It was obvious to me that he had spent a great deal of time studying the horses, but it was also apparent that, aside from the pleasure, this time was completely wasted.

The old-fashioned idea that hard work pays still holds despite the modern ideas some people have. We should have a time for work, a certain amount of time for play and an allotted time for relaxation. If we find ourselves worrying about our work at a time when we should be relaxing, it is an indication that we have not spent our working time to the best advantage. If we do not concentrate on what we are doing while we are working we will either not complete the job or we won't do it well. Then we spoil our relaxation time because of worry about the unfinished job before us. Remember that time is the most valuable thing in the world!

People Fail Because They Are Careless

It is surprising how many people there are in the world who are careless about their dress and speech, their letters and the tools with which they work. Only a genius can afford to be careless in these things and geniuses, particularly authentic geniuses, are too rare for consideration here. You will make a better impression and you will do better work if you use care in everything you do, even if you don't accomplish quite as much.

Your pharmacy teacher is undoubtedly very fussy about the appearance of the labels on the preparations which you manufacture. He has good reason for this. Now is the time for you to develop the habit of turning out a good-looking package. People are prone to judge the contents by the appearance of the package and if the package is untidy they lose confidence in the medication. This is a very definite psychological factor which cannot be ignored. When we buy a hammer or a pair of nylons, we can tell at a glance whether the item is of good quality or poor quality. This is not true in the case of medical products. The doctor's patient cannot discern whether a tablet or a tincture is well made or whether a prescription is compounded properly. He must rely on the label and some day your name may be on that label.

Therefore, see to it that the appearance of your label reflects the care which you have put into the compounding of the contents. Remember that carelessness can interfere with your career.

People Fail Because They Lack Vocabulary

We cannot express ourselves properly without adequate vocabulary. Our vocabularies require constant improvement if we are to lodge conviction when we speak either to an individual or a group. Add to your store of useful words. Make it a point to learn the proper use of a new word almost daily. The people who add one word a year to their vocabularies cannot hope to be interesting. At the same time avoid the use of too many big words which may be unfamiliar to your listener. Use plain, simple language rather than long and unusual words. You need not avoid the use of unfamiliar words because if you understand the use of a word you will usually employ it in such a way that your listener will know what it means even if he hasn't heard the word before. For example: If you say, "My friend is ubiquitous," and follow that statement almost immediately with a statement such as "I see him everywhere I go" you have driven home your point and you have perhaps made use of a new word and made your

point clearly. This will also add interest value to your conversation.

People Fail Because They Lack Humility

Someone has said that a great man is humble before facts. Too many people you and I meet know all the answers and are quick to give them. You can of course be too factual and thus become dull and uninteresting; however, many a career has been ruined or retarded because the person talked without having the facts at a time when the real facts were important. Remember that it is wise to admit you do not know something when you really do not. Humans react unfavorably to boastfulness. Boastful claims of superior knowledge or skill are commonly regarded as challenges and are resented. The performance of a boaster is scrutinized critically and unsympathetically.

People Fail Because They Talk Too Much

The ability to express oneself well is a good thing. However, the ability to be a good listener is equally essential. There are many articulate individuals who are fascinated and overly impressed with the sound of their own voices. On the other hand, there are many people who can get other people to do things for them because they listen to and concentrate on what is being said.

In this audience right now there are some who are listening and understanding every word of what is being said. There are others who are day-dreaming, and while day-dreaming is not a terribly serious thing, it can be carried too far. When you day-dream you are outside this world in another world called "make-believe". If you stay outside too long you may find it difficult to come back into the world of reality. This can have serious consequences.

Try to develop the trait of being a good listener. You will find that it will make a profound impression upon your

friends and perhaps even the faculty of this school. Try to be a constructive conversationalist; that is, ask people questions about themselves and then *listen* to what they have to say. Don't tell other people your troubles. They are not interested in your troubles; they are only interested in their own. Keep in mind the modern definition of a bore.... "A bore is a person who when asked how he is....tells you." Remember, then, to combine talking with listening in the right proportions.

People Fail Because They Do Not Think in Terms of Others

There are two ways to get ahead in the world:

- (a) At the expense of others
- (b) By helping others

If you will think in terms of the other fellow's problem and try to help him, you will quickly gain in moral strength no matter how feeble your efforts. Don't force yourself into the position of helping others. When you are prepared to help and you are sincerely willing to help, opportunities will come naturally. As we face the challenges of living, we can easily become cynical and conclude that everyone we meet is interested only in helping himself. When you get into serious trouble, you will find that this is not true. There are lots of good people in the world who will rise to help you because they have learned that doing so will give them inward satisfaction. This means more to them than the material things of life.

The self-centered person who thinks and talks only about his own interest eventually taxes the patience of his friends and associates. The successful person is one who gives some attention to the interests of others. It is not necessary that a man abandon or ignore his own interests to give attention to the interests of others; for one who lacks interest of his own cannot contribute anything to a companionship or to a business or professional association.

People Fail Because They Lack Tact

Tact is a virtue which is hard to define, but it is closely related to courtesy. At least tact is a second cousin to cour-

tesy. If you greet a lady with your hat on and a cigarette in your mouth you are discourteous. If you sit in front of the desk of a teacher or business man and slyly read his mail while he answers the phone you lack tact. You know there are people who can do upside-down reading with great efficiency, particularly when that which they read is not meant for their eyes.

When you wish to speak with someone about a problem, find the right time to do it. The right time is not when the person is rushed or under pressure or preparing to leave on a journey. The right time is when his mind is at ease. Perhaps you can give him some help in allowing his mind to relax by the way in which you present your problem. Remember, then, that even intelligent people often fail because they lack tact.

People Fail Because They Do Not Prepare

Many people approach others without preparation. This is called the "reckless abandon approach." If you approach a person to present an idea, or to ask a question, or to ask his assistance, be sure you know what you are going to say and why before you make the approach.

If you go to see a member of this faculty about a problem which is bothering you, extend to that person the courtesy of having first tried to work it out yourself. In trying to work it out for yourself, you will have at least prepared yourself for an intelligent discussion of the problem. Remember, then, to do everything you can do on your own before you ask for help. Remember to be prepared before you discuss a subject or ask a question. Don't rely on impulse or indulge in impetuous theorizing.

People Fail Because They Do Not Recognize Their Superiors

During your careers you will probably hold a number of jobs. In some of these you will find that your superior is a sup-

erior in title only. Perhaps he will be inferior to you in ability. Your job is to recognize him regardless of his ability and to make his job easier. If your superior does not recognize your ability, it will ultimately be recognized by his superiors, but, meanwhile your duty is to be loyal to him. If you are dissatisfied with the kind of treatment your superior gives you, or the way he runs his department, or if you believe you have no future in it, find a job somewhere else. However, while you are working for that man, do your best and, above all, never criticize him to others. Remember that some day when you are the boss you will expect that kind of cooperation from the people who work for you.

People Fail Because They Do Not Cooperate

Many people actually believe they are cooperating with their associates when they are not. Perhaps they are not in complete sympathy with the activity or the project of their associates and, therefore, they synthesize reasons why they cannot do what has been suggested. In other words, they create artificial barriers or obstacles. They cannot accept the opinions of others because their minds are closed to thoughts of something new.

Ask yourself this question: "Am I cooperating enthusiastically or am I secretly hoping the project will fail because someone else thought of it?" Resolve to do your best in accomplishing the objective and do your part in the project if it is in the best interests of the firm or institution or if the decision represents a majority opinion. Do this even if it is impossible to agree with the majority of those who have made the decision. Work as a member of a team not as an individual.

It is hoped that some of these points will help you do your job so well that you will rise from employee to employer. When you do, you will find a somewhat different set of problems in controlling and directing people. Then it will help

if you will keep in mind these fundamentals of management:

1. Organize
2. Supervise
3. Recognize

In other words, organize and describe the job so thoroughly and completely for your employees that there can be no doubt as to what is expected and how to accomplish the objective.

Then, supervise to make certain that the job is done in the way you expect it to be done.

Finally, recognize the employee when he does it. Recognize by praise . . . sincere praise, both publicly and privately, and by material rewards.

There are some in this room who have qualities of leadership which will carry them toward the responsibilities of the executive group. According to a recent report of Social Research Inc., successful executives come in every size, class and temperament and range from highly trained to "self-made" men. However, they are endowed with a number of the same essential traits:

1. They want achievement first, then material rewards and finally, prestige. The order is usually, if not always, the same.
2. They accept authority as a controlling and helpful relationship and not for its own sake or to satisfy their ego.
3. They ably organize all disorderly and inefficient situations and they foresee the implications and results of their organization.
4. They force their way decisively to a conclusion even though it may be a wrong one.
5. They keep so active that they have a hard time taking vacations.
6. They have a strong interest in the practical, immediate, and direct, yet they often fight a general sense of futility and fearing they may fail some time even though things are going well.

Most of these traits are on the constructive side, but a few indicate weakness. That is to be expected because executives are human beings and therefore subject to the same weaknesses as other humans.

The list of reasons why people fail may strike you as a lengthy one. You may also have the feeling that it is difficult to conform to the best methods of conduct in your relations with friends and associates. However, if you will give them some serious thought you will come to the conclusion that it is not difficult to conform to the best methods because they are sensible and logical. All of the snags can be avoided with a little practice and getting along in a career is easier than it may seem because so many people ignore the rules of conduct and the person who doesn't is really appreciated.

In closing, I should like to point out that opportunities for a satisfying career in pharmacy are plentiful. This is true because we are in a profession or industry concerned with health. This means that you will be occupied in a career which promotes the welfare of the people. You and I have a part in this important health program.

The late Dr. George Crile once made a statement somewhat as follows: "In the future the treatment of diseases will be an admission of failure." Doctor Crile of course meant that the major emphasis should be on the prevention of diseases . . . keeping well people well. This is a worth-while objective which will not be reached in our lifetimes, in our children's lifetimes, nor in their children's lifetimes. Fortunately, however, progress is being made and while such progress appears to be painfully slow we are moving toward that objective. You and I can take infinite pride in the fact that we are associated with a profession which is making important contributions toward the attainment of that goal.

Notes on Pharmaceutical Training in New Jersey before 1900

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The history of professional pharmacy in New Jersey before the founding of the New Jersey Pharmaceutical Association in 1870, is probably not to be differentiated from the professional developments in Philadelphia and New York. On the west the Philadelphia College of Pharmacy reached out its benevolent hand, and on the east the College of Pharmacy of New York and the *Deutscher Apotheker-Verein* exerted a similar influence.

For this reason, and also because other sources are not readily available, these "Notes" cover only the period from 1870-1900, and are derived almost entirely from the annual *Proceedings* of the New Jersey Pharmaceutical Association, and the *Annual Announcements* of the New Jersey College of Pharmacy (now a college of Rutgers University).

Legal Standards

The founding of the New Jersey Pharmaceutical Association was premised on the need for trained pharmacists and the desirability of requiring by law either graduation from a college of pharmacy or examination by a professional board.¹ It is therefore not surprising that the problem of professional training was often before the Association. In 1872 President Dalrymple pointed out that "the time will come when New Jersey should have a College of Pharmacy,"² but the Association as a group never did take the initiative in this matter.³ In 1877, the Association did succeed in having enacted a law requiring an examination by a State Board of Pharmacy of prospective pharmacists who were not college graduates.⁴

Thereafter the Association sought to add experience and education requirements to the law, and in 1886 a four-year experience requirement was enacted.⁴ In 1895 a law provided for the examination and registration of assistants, who were to have three years of experience, and for the examination of college graduates by the Board.⁵ Moreover, through most of this period the Association sought vainly to make college graduation a prerequisite for examination and license.⁶

Apprenticeship

The Association also expressed considerable interest in raising the level of pre-college and pre-apprenticeship standards. In 1875 there was included among the queries, "What Educational Requirements should Pharmacists Demand of Those Who Seek to Learn the Business?" This query elicited two responses. James Stratton voiced an objection to the notion that "*any* boy of 12 to 15 years, who can read, write and cypher *a little*, is well enough educated to be placed in any store." He therefore recommended schooling in Mathematics ("mental arithmetic in particular") and Languages ("taking Latin as the key note"). He thought also that a knowledge of French and German would "be of immediate pecuniary advantage" in our cosmopolitan cities.⁷

The other response came from Professor P. W. Bedford, qualified by long experience as an examiner at the New York College. He stressed particularly the need for a common school education, especially in arithmetic, grammar, geography, and penmanship. Some classical education, particularly in Latin, was also desirable. He objected to the hiring of boys from eleven to fifteen years of age who were "under the necessity of migrating from one employer to another," when they should be at school. He therefore recommended that apprentices should be at least fifteen years old.⁸

Professor Bedford also took advantage of the occasion to enter a plea to the pharmacists to be considerate of their obligations as preceptors.⁹ In line with this he presented to

the same meeting of the Association a response to another query, "What Books of Reference should be in every Pharmaceutical Establishment?"¹⁰ His rather ambitious list, with the "more-recently-issued books" which he selected for special emphasis designated with an asterisk, follows:

- Attfield's Pharmaceutical Chemistry.
- Bowman's Medical Chemistry.
- Wittstein's Pharmaceutical Chemistry.
- United States Dispensatory.
- Pareira's *Materia Medica*.
- *Pharmacographia, by Fluekiger and Hanbury.
- United States Pharmacopoeia.
- *German Pharmacopoeia, English translation by C. L. Lochman.
- Squire's Companion to the British Pharmacopoeia.
- Barber's Student's Pharmacopoeia.
- Parrish's Practical Pharmacy.
- Gray's Lessons in Botany.
- Cooke's Manual of Structural Botany.
- Griffith's Universal Formulary.
- Ellis' Medical Formulary.
- *Dick's Encyclopedia of Practical Receipts.
- Redwood's Supplement to the British Pharmacopoeia.
- *Anthon's Pharmaceutical Synonyms.
- *Pollock's Botanical Index.
- American Journal of Pharmacy.
- The Druggists' Circular and Chemical Gazette.
- The Pharmacist.

Ten years later the Association again showed interest in pharmaceutical training. This time the query on "Education Needed for Young Men Entering the Profession of Pharmacy" elicited four responses.¹¹ August Drescher, later a founder and president of the New Jersey College of Pharmacy, came to the conclusion "after some experience with various apprentices," that

candidates for apprenticeship . . . should be about eighteen years of age, should have an education such as our High Schools afford, including a fair knowledge of Latin and Greek, which is not obligatory in our High School, but which I consider necessary for our profession.¹²

Fred B. Kilmer, an outstanding pharmacist of the state, prefaced his response to the query with an interesting comment on his own apprenticeship. His own glowing picture of pharmacy as a lad had been "slightly obscured : . . when, begrimed with oil and dirt, he wheeled white lead through the streets, and struggled with refractory bottles in vain attempts to cleanse them, for the magnificent sum of \$1.50 per week."¹²

With regard to the education needed for entry into the profession, Mr. Kilmer had established rather high standards. He pointed out that high standards were especially important since nine-tenths of pharmaceutical trainees did not go to a college of pharmacy. The prospective trainee, while yet in school, should take arithmetic (especially percentage, ratio and proportion, alligation, powers and roots, and weights and measures), English Grammar and Composition, Latin (with special drill on Latin adjectives and numeral adjectives), and Natural Science (Physics, Chemistry, Botany, Physiology).¹³

In accordance with these ideas, Mr. Kilmer constructed a set of 105 test questions¹⁴ which he "found of service in examining young men who desired to enter the profession of pharmacy" and which he had loaned to other pharmacists for the same purpose.

Many of his questions were of considerable difficulty, as the following examples will illustrate:

General Questions—Write the following in figures and words:
CXXIV, VIJSS.

Physics, Chemistry, etc.—Give an idea of the composition of the following: Iodide of potassium, carbonate of sodium, bicarbonate of soda.—What is chemical affinity?

Physiology—What is the office of the gastric juice?

Latin—What parts of speech are the following? Charta, aurum, nobilis, herba, amplius, bibere, libra, optimus, vellere. —Change the following into English: Unam, bis, prima, bini, tres, sextus, decimus, duodecem, vicisimus, vigintitres.

Botany—What is the difference between a leaf bud and a leaf flower? —Explain the meaning of amorphous, genus, calyx, hybrid, petals, indigenous, succulent, globous.

Arithmetic—What is the square root of 137,641?

—Draw the following plane figures: Rectangle, hexagon, octagon, triangle, pyramid, cone, ellipse, spheroid.

Mr. Kilmer admitted that his questions had been criticized for their difficulty, and he was not suggesting them as a standard. They were "adapted to young men who have had school advantages equal to what are known as high schools in our State," and were useful in "determining the applicant's habits and training."¹⁶

How prevalent such examinations and standards were, is of course difficult to say. Mr. Kilmer himself pointed out that:

many [young men] enter the business with glowing fancies of short hours spent in luxurious ease, accompanied with large emoluments, and it is very soon dispelled, and he leaves to enter new fields. A neighbor of the writer says he has given up trying to educate young men in pharmacy, so he engages boys and keeps them as long as they prove useful as messengers, and then casts them adrift.¹⁷

There is a suggestion, too, that standards of pharmaceutical training were not generally as high as Kilmer's in the title Professor Bedford chose—"Where Lies the Fault?"—in responding to the query on education. Returning to the thesis he had expounded ten years earlier, Bedford placed the fault "primarily with the druggist." The druggist should be doing, and was not, three things: First, ascertaining that his apprentices had the "ordinary requirements of a common school education . . . [especially] in . . . spelling, arithmetic, penmanship"; second, providing, in the store, an adequate library of books in "botany, materia medica, pharmacy, pharmacology, poisons and chemistry" and of current pharmaceutical journals, and providing the time and supervision needed by his apprentice in using these facilities; and third, directly encouraging and supervising the trainee's "practical work."¹⁸

Perhaps as a result of this interest, the Association in 1886 passed a resolution that "apprentices should be graduates of schools."¹⁰ Yet the overall effect is perhaps to be judged from the fact that in 1903 the Association was again warned, "Do not rob the cradle."²⁰

The Board Of Pharmacy

It is obvious from the criticisms implicit in the remarks of Drescher, Kilmer, and Bedford that too frequently the pharmacists were employing unschooled, youthful apprentices and too frequently exhibited no sense of obligation to them. Men of the caliber of Kilmer were rare. Thus, since ninety per cent of the pharmacists were trained in the drug store, the licensing policy of the Board of Pharmacy was of prime importance.

In its early years, the Board, according to H. P. Reynolds, an eminent pharmacist of the time, directed its examinations toward "ascertaining the practical fitness of applicants . . . without insisting too rigidly on theroretical attainments."²¹ About 1884, however, "in the exercise of sound discretion, the board . . . made its examinations more exacting."²² It was Mr. Reynold's opinion that "the Board should henceforth advance another step by framing examinations upon those of the New York and Philadelphia Colleges of Pharmacy, so that the future New Jersey certificate may be equivalent to the diploma of any American college."²³

These concepts of the role of the Pharmacy Board bore fruit. In 1895, William C. Alpers, reported the results of his three years' experience as a member of the Board, and of his correspondence with the secretaries of "most" of the colleges and state boards in the country. His report, "Examinations Before Boards of Pharmacy,"²⁴ shows the high caliber of professional responsibility assumed by the New Jersey Board, and makes some interesting comments on practices of other boards and colleges. Four major ideas received emphasis: the responsibility of examiners to remain conversant with scientific progress; the wisdom of abolishing, as had

been done in New Jersey, compulsory registration of college graduates ("The questions of some of the colleges would hardly answer for our Assistant's examination"); the supplementing of written theoretical examinations with practical and oral examinations; and the desirability of the publication of the scope of examinations in justice to the examinee. The last, Mr. Alpers believed, had never been done by a Board of Pharmacy and the highlight of his report was a "Curriculum for Candidates Before the New Jersey Board of Pharmacy." Alpers hoped this Curriculum would be adopted by the Association and recommended to the Board. (The Board was virtually a committee of the Association.²⁶)

This Curriculum is significant enough to be given in detail, not only because, after an "animated discussion," it was unanimously carried,²⁷ and thereafter put into practice, but also because it was "adopted by the National Association" which resolved to send a copy to each Board of Pharmacy with the request that it be adopted.²⁷

Curriculum for Candidates Before the New Jersey Board of Pharmacy

PHARMACY

Assistant—Physical laws applied in Pharmacy, the balance, different kinds of thermometers, specific gravity, spectrum, weights and measures and different systems, percentage, solutions, etc.; percolation and maceration, vehicles and excipients, preparation of prescriptions.

Pharmacist—Potent drugs and their strength, alkaloidal drugs, incompatibles, solubility, assaying, all official preparations, their ingredients, difficulties in preparing them and how to overcome them, reading and preparing of complicated prescriptions.

Mode of extracting alkaloids, glucosides, resins, etc.

MATERIA MEDICA (Botany and Physiology)

Assistant—Vegetable Morphology, parts of a plant and their function.

Primary physiology, different organs of the human body, their uses and functions, especially respiratory and alimentary organs.

Official drugs, habitat and medicinal properties.

Therapeutic terms, simple pharmacognosy.

Pharmacist—Systematic botany and vegetable physiology.
Natural orders of all official drugs, growth of plants and their chemical constituents, history of each drug from gathering to dispensing.
Therapeutic terms continued, Pharmacognosy, microscope.

CHEMISTRY

Assistant—Inorganic chemistry, symbols and terms, atomic and molecular weights, chemical equations, chemical incompatibles, formulas of all official chemicals, qualitative analysis.

Pharmacist—Inorganic chemistry; preparation of all official chemicals; their possible adulterants; testing for and detecting adulterants. Quantitative analysis; examples in stoichiometry.

Organic chemistry, notation, hydrocarbons, ethers and alcohols, carbohydrates, chemistry of alkaloids, glucosides.

Analysis of water, urine, food, etc.

TOXICOLOGY, PRESCRIPTION, DOSES

Assistant—Prescription with potent drugs, doses of all drugs, antidotes of potent drugs, prescription Latin, definition of Latin terms and abbreviations used in prescriptions, translations of Latin prescriptions into English and vice versa.

Pharmacist—Symptoms of poisoning by drugs or chemicals; antidotes and how to apply; prescription difficulties; testing for poisons in food or water; examining contents of stomach; bacteriology, ptomaines and leucomaines.

There is no way of determining from the sources available how long the Curriculum remained in use in New Jersey. It was soon subjected to attack. In 1897, President Ryerson in his address to the New Jersey Pharmaceutical Association objected that the standards had become "unjust and oppressive" and "class legislation." The "doctrinaires of Pharmacy," he insisted, would have "all be analysts, microscopists and botanists of the highest types," and make "our boys . . . simply walking Quiz Compend."*

The next year President Sayre commented that he believed the questions used by the State Board seemed better suited to college than board examinations. In his opinion the criterion should be whether or not the question was likely to be met in general drugstore practice.* (The Board had

passed 103 out of 250 applicants for pharmacists and assistants from May 1897 to May 1898.²⁰) However, a resolution offered by Mr. Ryerson that the Curriculum be rescinded, was laid on the table.²¹

In 1899 Mr. Alpers arose to a defense of his Curriculum,²² and ended with an impassioned plea for cooperation from the practicing pharmacist. Demonstrating rather well the need for theoretical knowledge if one were to understand the Pharmacopoeia, Alpers did admit that the most desirable situation would be for the colleges to test in theoretical knowledge and the boards in practical abilities. This dichotomy should not prevail, however, until such time as college graduation became a prerequisite for licensing. It is interesting that this compromise did not become general; the Boards continued to test both theoretically and practically in accordance with Alper's earlier ideas.

The New Jersey College of Pharmacy

Formal college training in pharmacy in New Jersey began on December 1, 1892. The New Jersey College of Pharmacy was organized in the summer of 1892 by Philemon E. Hommell, August Drescher and six other pharmacists and two physicians. Motivated by professional considerations, with, according to Dr. Hommell, a strong undercurrent of local pride,²³ the College, like its American predecessors,²⁴ was to be both a local association and an instructional institution.²⁵ The former function apparently never developed, although in 1895 there were listed twenty-seven pharmacists or pharmacist-physicians as "Members of the New Jersey College of Pharmacy."²⁶

Instruction started in 1892 with nine junior students and "sixteen special students in chemistry."²⁷ The original faculty consisted of a Professor of Physics and Chemistry (August Drescher), a Professor of Botany, Materia Medica and Physiology (Philemon E. Hommell), a Professor of Pharmacy, an instructor in Botany, Materia Medica and Microscopy, and an

instructor in the chemical and pharmaceutical laboratories.²⁸ The faculty remained at about the same size for the remaining years of the century.

Entrance to the college was open to grammar school graduates (for 1893 and 1894 the requirement was published as high school graduation), or to those who passed "a preliminary examination before a committee of the Board of Trustees . . . in writing, spelling, arithmetic and geography."²⁹

The instructional program was divided into the usual junior and senior years. Lectures were in the evening or late afternoons; laboratories usually from 2 to 6 P. M. Thus, in 1899, the juniors attended lectures on Monday and Friday from 7 to 9 P. M. and Monday from 2 to 5:30 P. M. The seniors attended lectures on Tuesday and Thursday evenings from 7 to 9 P. M., on Saturday from 2 to 4 P. M., and "after the holidays" on Wednesday from 7 to 9 P. M. Both juniors and seniors attended laboratories "one or two afternoons each week."³⁰

By 1895, the curriculum was well planned and the College *Announcement* contained an impressive eighteen-page "Synopsis of Instruction," composed of Syllabi for the various courses. The Department of Physics and Chemistry provided fifteen lectures in Physics, twenty-five lectures in non-metallic Chemistry, and twenty-five laboratory periods for the juniors. It provided also lectures in the Chemistry of Metals, Organic Chemistry and Qualitative Analysis for the seniors. The Department of Biology offered lectures in Botany and Physiology to the juniors, and *Materia Medica* and Toxicology to the seniors. The Department of Pharmacy and Pharmaceutical Chemistry offered lectures in Pharmacology, Theoretical and Practical Pharmacy, and Pharmaceutical Inorganic Chemistry to the juniors, and lectures in Pharmaceutical Organic Chemistry and laboratory work in manufacturing, assaying, and pharmaceutical and physiological analysis to the seniors. The Department of Pharmacognosy and

Histological Botany offered Pharmacognosy and Microscopy to the juniors, and Microscopy and Vegetable Histology to the seniors.⁴¹ Special lectures were provided in Hygiene, Latin and Pharmaceutical Nomenclature, Pharmacy Law, and Physiological Chemistry.⁴²

By 1899 a Department of Special Pharmacognosy was giving a lecture course, a Department of Bacteriology was offering "didactic lectures and practical laboratory work." A Department of Hygiene was offering its specialties. Pharmaceutical Jurisprudence was offered to the seniors.⁴³

So imposing a curriculum called for an equally imposing array of texts. The following list, as given in the 1898 *Announcement*, was selected as the largest of such lists published from 1892-1899:

TEXT BOOKS

Attfield's Chemistry. Roscoe's Elementry Chemistry.
Fowne's Chemistry.
Peck Ganot's Natural Philosophy (Physics.)
Fresenius' Qual. Analysis. Beilstein's Qual. Analysis
Hoffman and Powers' Exam. Medicinal Chemicals
Allen's Commercial Organic Analysis.
Sutton's Vol. Analysis.
Schimpf's Vol. Analysis.
Taylor on Poisons (Toxicology).
Roscoe and Schorlemmer, Chemistry of the Carbon Compounds.
Sayer's Org. Materia Medica
Gray's Works on Botany
Flueckiger and Tschirsch by Powers, Pharmacognosy.
Behren's Guide to the Microscope in Botany, by Hervey.
Remington's Pharmacy.
U. S. Pharmacopoeia. U. S. Dispensatory.
National Dispensatory.
Crother and Bice's Elements of Latin.

In its early years the College had a difficult struggle and it is impossible to say how effectively this curriculum was put into practice. There was a standing joke that at the beginning there were "more microscopes than students."⁴⁴

and too often there were no salaries for the professors.⁴⁵ Slowly the college prospered. In 1894 two students met the requirements for graduation—successful passing of junior and senior examinations, four years of practical experience in a “legitimate pharmacy,” and presentation of a thesis⁴⁶—and in 1898 thirteen students met the requirements. All in all, by 1900 the College had graduated forty-nine pharmacists and was well started on its career of service to the State of New Jersey.

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2. 1872 *Proceedings*, p. 67.
3. 1876-1877 *Proceedings*, pp. 5-7.
4. 1886 *Proceeding*, pp. 17-19.
5. 1895 *Proceedings*, pp. 178-181.
6. Cf. Cowen, *op. cit.*, p. 21.
7. 1875 *Proceedings*, pp. 26-27.
8. *Ibid.*, pp. 36-39.
9. *Ibid.*, pp. 38-39.
10. *Ibid.*, pp. 20-22.
11. Besides the answers of Drescher, Kilmer, and Bedford, a rather pompous and vacuous response was presented by Dr. D. W. Brant.
12. 1885 *Proceedings*, p. 53.
13. *Ibid.*, p. 61.
14. *Ibid.*, pp. 62-63.
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16. *Ibid.*, pp. 64-65.
17. *Ibid.*, pp. 60-61.
18. *Ibid.*, pp. 94-98.
19. 1886 *Proceedings*, p. 99.
20. 1903 *Proceedings*, p. 17.
21. “Our Pharmacy Law,” 1884 *Proceedings*, p. 62.
22. *Ibid.*
23. *Ibid.*
24. 1895 *Proceedings*, pp. 65-76.
25. Cowen, *op. cit.*, pp. 27-28.
26. 1895 *Proceedings*, pp. 75-76.
27. 1896 *Proceedings*, p. 28.
28. 1897 *Proceedings*, p. 19.
29. 1898 *Proceedings*, p. 21.
30. *Ibid.*, p. 30.

31. *Ibid.*, p. 48.
32. "The Pharmacopoeia and Examinations," 1899 *Proceedings*, pp. 54-57.
33. In an interview with the writer in 1935. See also the first *Annual Announcement of the New Jersey College of Pharmacy, Session, 1892-1893*, p. 6.
34. Cf., E. Kremers and G. Urdang, *History of Pharmacy* (Philadelphia, 1940) pp. 177-180.
35. A more complete account of the founding of the College is to be found in *Rutgers University, New Jersey College of Pharmacy, Fifteenth Annual Commencement* (1943) pp. 8-10.
36. *Annual Announcement*, 1895-1896, p. 30.
37. *Annual Announcement*, 1893-1894, p. 10.
38. *Annual Announcement*, 1892-1893, p. 5.
39. *Ibid.*, p. 7.
40. *Annual Announcement*, 1899-1900, p. 6.
41. *Annual Announcement*, 1895-1896, pp. 5, 11-28.
42. *Ibid.*, p. 6.
43. *Annual Announcement*, 1899-1900, pp. 5, 24-25.
44. Interview with Dr. Hommell, 1935.
45. Interview with Dr. Frank B. Meeker, 1943.
46. *Annual Announcement*, 1893-1894, p. 7.

E. Burns Geiger has been appointed chief of the Pharmacy Division of the Veterans Administration Department of Medicine and Surgery. Before his new assignment Mr. Geiger was assistant to W. Paul Briggs, former chief of the division who resigned late in December, 1947; to return to active duty as a commander in the U. S. Navy. He is an alumnus of George Washington University, and from 1936 to 1943 he operated a retail pharmacy in Hagerstown, Maryland, when he was commissioned in the Navy. He served aboard the USS Texas and the USS Iowa and was released to inactive duty in January, 1946, as a lieutenant. From January, 1946, until he joined the VA in May of that year, he was pharmacist at the Washington County Hospital in Hagerstown.

Veterans taking internship and residency training under the Servicemen's Readjustment Act (G. I. Bill) and the Vocational Rehabilitation Act (Public Law 16) are not entitled to increase subsistence allowances authorized under a recently enacted law.

The higher rates are available only to veterans in schools, colleges, and Universities pursuing full-time courses of education.

The Monograph Arrangement of U. S. P. XIII and N. F. VIII

As Viewed by Students and Teachers

GEORGE E. OSBORNE and C. O. LEE

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The appearance of U. S. P. XIII and N. F. VIII during this past year has brought to the attention of the many the argument of the few. Even before the approval of the current monograph arrangement and the making of the Latin titles secondary to the English titles, agreement of the committee members themselves was not in unanimity. Since distribution, nearly all published comment has been favorable, a fact that would indicate almost complete satisfaction with the works; however, such is not the case. It is only fair, therefore, to present some of the views of those who do not consider the new system to be notably advantageous.

It might be considered that any one logical arrangement is as good as any other. Looking at the U. S. P. and N. F. as general reference works, this becomes true, since a person in the library checks an index in the back of any reference volume before looking through the text for his material. Those pharmacists, however, who make almost daily reference to the official compendia, must go to their material directly. The marginal running index (which is essential to the present system if it must be continued) is an assistance, but using it necessitates the "double trouble" of locating now obscure items. Inasmuch as the old arrangement has been in existence since the first pharmacopoeia (1820), it is safe to say that every United States trained, practicing pharmacist in the country today is quite familiar with the grouping of pharmaceuticals by type, so much so that he considers this classification characteristic of his profession, just as the pharmacologist typifies his field by grouping the drugs ac-

cording to common physiological action. The pharmacist thinks of a given preparation first by type, then by ingredient. Consequently, the argument that the arrangement of preparations by chemical or botanical constitution rather than by type has its advantages is debatable—to the chemist or botanist, perhaps; to the pharmacist, definitely not.

To say that the new system is "just as good" as the old is admitting to folly. Change, *per se*, is not progress; the substitution for a proved system of a new one which cannot claim distinct advantages, neither immediate nor long range, is unwarranted and unwise.

The great hue and cry in support of the current system expounds the advantage that all the compounds and preparations of any given chemical are to be found in proximal order. This is not altogether true. Witness, for example, the compounds of calcium, of iron, or of carbon. If one is to compile a list of the compounds of calcium, he must remember to look additionally under Lime and Chalk. The compounds of iron are found in three different locations: under ferrous compounds, ferric compounds and iron compounds; the last one is widely separated from the first two. Carbon compounds are listed together; charcoal is found elsewhere.

The old system has like limitations (particularly noteworthy is the instance of Chalk), but the similarity of the Latin titles (e. g., *Calci*, *Calx*; *Ferro*-, *Ferri*- *Ferrum*) results in less confusion than the dissimilar English titles. This disadvantage of the new plan was brought to light when a sophomore course in inorganic pharmacy was redesigned to approach the problems from the angle of preparations of the same and similar chemicals. The purpose of this plan was twofold: first, the students in freshman pharmacy had already studied the preparations by type, and the different approach was expected to maintain interest; second, the new arrangement of material was an earnest attempt to take maximum advantage of the new editions of the U. S. P. and N. F.

and to familiarize the students with the new order. It fell short of expectation, both from the teacher's and the students' point of view.

The decision to give the English title the primary position in the official monographs is laudable. The growing disuse of Latin in medical terminology, particularly in the writing of prescriptions, is basis enough for relegating the Latin titles to the secondary position in the nomenclature of the Pharmacopoeia and the National Formulary. The soundness of the argument that students no longer will have to learn cumbersome Latin titles, on the other hand, is questioned; memorizing official English titles created for new, sometimes patented, items, constitutes an equal strain on the students. The trend toward the inclusion of more and more synthetic chemicals means that the students must learn more and more unfamiliar official names along with the better known trade names and formulas.

Further, the inversion of the names of the preparations makes for clumsy sentence structure when those names are used in the literature. Those of us who endeavor to write as clearly and as concisely as we know how are finding it difficult to replace "a clear solution of lead subacetate," correct, with "a clear lead subacetate solution," technically incorrect, and as cumbersome as a Latin title.

These points are not the grumblings of bad losers. They stem from an honest effort to use the new editions efficiently and from a sincere desire to see sound improvements made in the general set-up of the texts which will facilitate their use to the pharmacist. Nor do these words represent the dissatisfaction of one or two persons. Students in classes other than our own seem to prefer the collection of preparations under a type grouping.

Now let us propose a few suggestions, for which we do not claim originality, but which have been discussed freely here and which we think worthy of consideration:

One solution to the arrangement problem, perhaps the best one from the standpoint of facility of use, is the old idea of listing drugs and chemicals in the Pharmacopoeia and their preparations in the National Formulary. This idea is parallel to and one step beyond the suggestion of the Subcommittee on Scope, which is to be found in the U. S. P. Circular 509, page 1738 (July 5, 1944), under the heading "Proposal for Changes in Pharmacopoeial Arrangement." It is as follows: "At the recent meeting of the Subcommittee on Scope the proposal was made that in the next Pharmacopoeia we retain in the first section only such items as are used by physicians and surgeons in their practice, and that we relegate to a second division the substances which are introduced and standardized only because they are pharmaceutical necessities." Our plan for the separate books, of course, would call for complete cooperation between the Committee on National Formulary and the Committee of Revision of the Pharmacopoeia. The publication of the two books under the direction of a single editor would be ideal; co-editorship would be practicable. A common committee on scope, composed of representatives from both groups, or even a fusion of the two committees, is plausible. Some sub-committees such as that on nomenclature, should be common; in most others, the members should be able to concentrate their efforts on the preparations of one book and work through only one organization rather than two. Legally, an item in either the U. S. P. or the N. F. is official, *ipso facto*. The use of the N. F. as a purgatory for cast out U. S. P. items is degrading and unnecessary; transfer of good pharmaceuticals and procedures from the N. F. to the U. S. P. is unfair to the workers on the former; inclusion of identical types of preparations in both works under distinctly different titles is petty and confusing. The ultimate unit organization would simplify both preparation and publication of the books.

Another problem which has elicited much discussion is that of keeping the official publications in a state of continuous revision. The use of bound supplements is, at present

the best possible answer to the question. However, unless the pharmacist methodically notes in his original copy the fact that a monograph has been modified by a supplement, he is most likely to forget it, leave the supplements on the shelf, and follow an outdated monograph. The publication in loose-leaf form (special reinforced pages and lock type rings are available) of an original edition once every five or ten years with annual supplements in the form of replacable pages seems to be a feasible solution. This method has been used by certain governmental organizations for a number of years with notable success. It is limited only to the laxity of the owners of the originals in making their corrections.

The question of nomenclature of chemicals, raised above, might be answered by the employment, in so far as possible, of the approved (chemical abstracts) chemical names. This practice might make the official works resemble a catalogue of a manufacturer, but the elimination of worrisome, more or less unrelated, official names would more than compensate for the trouble of learning specific chemical names.

The United States Pharmacopoeia and the National Formulary are probably the best pharmaceutical compendia in the world; of course, there are always improvements to be made. At the same time, no matter what changes occur, progressive or otherwise, their will always be dissatisfaction somewhere.

MARRIAGES

Miss Mary Lockie, daughter of Prof. and Mrs. L. D. Lockie, University of Buffalo, and Mr. John Lockport, New York, at the Delaware Avenue Baptist Church in Buffalo, the Reverend Neil Crawford of Toronto, Canada, officiating.

Francisco Marroquin, Beneficent Crusader

GEORGIANNA SIMMONS GITTINGER

School of Pharmacy, University of Maryland

When Pedro de Alvarado, restive at being second in command to Cortez in the Kingdom of New Spain, adventured farther to the south, he merely followed the usual pattern of 16th century conquest. But when as Captain General of Guatemala, he recommended the priest Francisco Marroquin to be first bishop of the new Kingdom, he exhibited admirable intuition.

Born in 1478 in Cantabria in the mountains of Oviedo, Francisco Marroquin met Pedro de Alvarado when the General came to Spain to secure his license to Guatemala. He sailed to America with Alvarado in 1530 to the capital city in the Valley of Almolonga.

He learned the native dialects promptly, in order to teach the Indians for whom he had keen interest and profound compassion. He was appointed Bishop in 1534, by Pope Paul III, and throughout his career demonstrated his triple personality by founding churches, schools and hospitals, as symbols of his devotion to God, to education and to health.

As Bishop he had scarcely made a beginning when in 1541 the fourteen year old City of the Caballeros of Santiago de Guatemala was wiped out by floods from the volcano Agua. He promptly sold the remains of the church property in the Ciudad Vieja (as it came to be called), to obtain funds for new structures in the translated capital at Panchoy.

It was in this new City of the Caballeros of Santiago de Guatemala in the Valley of Panchoy that there eventually developed the Golden Age of Guatemalan and Central American culture, of which Francisco Marroquin was the serene and stable architect.

In the difficult period of formation of nationality, in the laborious birth of two cities, the older destroyed so soon, and then the new one to be established, the distinguished patriarchal figure of Francisco Marroquín passed along offering wisdom and tolerance. His ebullient constructive spirit surmounted the disaster of the old city. His energy to raise and transform the desolate spirits of the people seemed a divine benediction as he guided and directed their slow but definite progress.

Bishop Marroquín was unquestionably the originator of every Spanish cultural work in the kingdom, though he struggled against unusual difficulties at first. The atmosphere in building the second city lacked the hopes and illusions common to a vigorous people. Their original spirit of adventure smothered by fear derived from the first disaster, made every constructive idea seem insecure. The constant threat of the volcanos, mortal danger of plague, and the natural irritability and jealousies of man impeded the healthy interest in building the new city. Everywhere was dread and lamentation and desperation, and added to this was the menace of unsubdued Indians. Yet they created a place of enduring beauty, and the great bishop founded a State, establishing churches, schools and hospitals the three works necessary for the life of a people.

The Church as he administered it, was a unifying force. Father Marroquín's talents extended the Christian influence with amazing speed. He wrote a catechism in the native dialects and also saw to it that the Indians were taught Castilian. He was the chief exponent of a common religion and a common language as fundamentals of the culture and evolution of Guatemala.

The Bishop brought in several religious orders to serve the Spanish and to help in training the Indians. In 1535 the Dominicans came from Nicaragua, in 1537 came the Mercedarians, followed by the Franciscans in 1540; these latter

two from Mexico. They all received lands and slaves as reward for their coming, and for their sustenance; and in time they all grew rich on the products of their possessions together with the gifts of the faithful. The Cathedral church and palace were built in 1547.

Bishop Marroquín united his ecclesiastical and educational primacy, being the first teacher in the country in all the noblest connotations of that word. He insisted that schools should be ancillary to the Church, because teaching is a valuable adjunct to preaching and ceremonial. In 1550 he established a school for "pious Indian women", and in 1562 he founded the school which was the forerunner of the University of San Carlos.

Protector of Indians throughout his lifetime, Bishop Marroquín's pity and care flowered in hospitals which developed from those in Spain, were the equal of any in that period. In 1537 a fixed income had been assigned to the Hospital of the Misericordia in the old city of Guatemala in the Valley of Almolonga, which was destroyed in 1541.

There were no real physicians nor surgeons for this first hospital, though a couple of quacks, Juan and Jeronimo are mentioned as of that early period. Remesal the first chronicler, describes a Doctor N (no other name is given), a botanist and herbalist who established himself in the old city as physician and surgeon. His lack of science was such that it is recorded that in one year he was responsible for more deaths than ten previous years of warfare. He was finally restrained from practice on pain of exile.

However in the distress of the destruction of the old city and the establishing of the new, the lack of any physician and the clamor of the people caused the Ayuntamiento to allow him to practice again at the risk of the people themselves. Whether he had improved in practice is not recorded.

Until physicians were eventually imported from New Spain the chief recourse in all trouble was the good Bishop and a fellow priest Fray Matias de Paz, who brought them herbs and soothing potions. During the plagues and pestilences in 1558, 1561 and 1562 and later there was a dearth of physicians, and only the saints and virgins could cure and console. We read of miracles but not of medicine and medicines.

A Royal Edict of 1559 founded the first hospital for Indians with 600 pesos which "should not be spent on administrative officials but used for the benefit of the poor and ill Indians isolated there." Later in the same year a second Edict founded the Hospital of Santiago, leaving ineffective the first one relative to the Indians' refuge. This provided an income totaling \$1000 per year under the lifetime supervision of the great Bishop, "because of the confidence we have in his person, we are assured it will be administered to the service of God our Lord and for the benefit of the poor inmates," This hospital developed into an institution solely for the Spanish, so that later, in 1578, another, San Alejo was established console. We read of miracles but not of medicine and medicine service. Unhappily for the Hospital and for Guatamala Bishop Marroquin died in 1563. He left funds for the Hospital.

In 1577 a public pharmacy was established to serve the hospital and any needy Indians. It was not until 1595 that the Hospital of Santiago had a medical administrator, Dr. Reyes de Bolanos; and in 1600 the surgeon Juan de Leon began serving the San Alejo, later on transferring to the Santiago.

Francisco Marroquin exhibited the spiritual riches and broad vision inherited from a long line of brave and cultured people. He is a genuine representative of the best in sixteenth century Spain. Exemplifying the devotion to religion and to learning typical of the supreme universities of the Spain of that era, he carried the crusading spirit of their culture to the New World.

Editorials

Undergraduate Training A Basic Responsibility

It is with a high degree of interest that the writer has watched the ever increasing emphasis on graduate training in our schools of pharmacy. Almost every issue of the Journal carries an article dealing with the subject; surveys show an appalling lack of trained personnel for positions in education and industry. Consequently, it is believed that we are failing in an important mission, and we must do something about it without delay.

It is suggested that we canvass each class for the purpose of hand-picking those who should pursue graduate training—apparently with the thought that whatever is left will be good enough to represent the profession in those very areas where our best representation should be advanced. We clamor on the one hand that we do not enjoy the same status as other professions, yet we plan to skim the cream of the crop for activities in which they will have little or nothing to do with the shaping of a more favorable public opinion of pharmacy. Further, in all too many cases we might be guilty of handicapping the one who is eventually sent out to practice pharmacy by losing sight of the fact that he too has definite needs insofar as his educational program is concerned, needs that have not been met because we are often too much concerned with graduate training to see that undergraduate education is an end in itself.

Statistics show that between 85 and 95 per cent of all graduates of schools of pharmacy enter the retail field, there to remain for the balance of their professional lives. Which ones of the students in any one class will not practice their profession is a question that cannot be answered in most cases. That is, circumstances rather than plans often govern the ultimate choice of activity of the individual. Thus

it would appear that we are safe in only one assumption, that every one of the undergraduate students will some day practice his calling. If this is conceded, then the baccalaureate degree becomes an end in itself and not a mere stepping stone to more advanced training. It would appear, therefore, that we have one main job to do in the training of pharmacists for, as Webster's International Dictionary puts it, "the preparation and preservation of drugs and the compounding and dispensing of physician's prescriptions".

This basic fact recognized, it then becomes apparent that we have still another major problem to solve. That is, if we recognize the undergraduate training as a means to a desired end, it then becomes necessary to determine the desire of each student and attempt to prepare him for assuming the responsibilities of his chosen area. The vast majority who are training specifically for the retail field have definite needs in order that their background prepare them for the humanistic as well as the professional activities of that field. These needs are perhaps best met with training in economics, sociology, psychology, political science and other studies of similar nature. It is unfair to these students to require that they spend their time in mastering the complicated formulas of calculus when their most crying mathematical need will be an understanding of bookkeeping; it is unfair that they be required to devote time to the study of the reactions of the individual cell to the exclusion of studies of reactions and behaviorisms of the organism as a whole and a part of society.

But because all students are potential pharmacists and because the majority will practice retail pharmacy, there still remains no reason why the needs of the comparative few who plan on research, teaching or other activities requiring graduate training should be entirely ignored. Given the same *basic* training as all other students in the recognition that something might interfere with their plans and cause them to enter the retail field after graduation, there would

seem to be little reason why they should not be permitted to diversify their undergraduate programs to include such advanced mathematics, chemistry, physics and other studies in the natural science fields as might best equip them for advanced work. It is just as unfair to such a student to require that he take a term or a year of bookkeeping as it is to demand that the retail practitioner master the intricacies of calculus.

Examination of the catalogues of several of the schools of pharmacy would indicate that revision of undergraduate curricula has taken the trend of preparing the undergraduate for study beyond the bachelor's degree, almost without regard to and in some instances at the expense of training for the practice of pharmacy. Necessary though the graduate training may be, and laudable though such programs may appear, it is believed that such emphasis at the expense of proper training of those who will represent our profession to the lay mind should not be continued. Overemphasis of graduate training can be dangerous. Let us use every means to avoid sabotage of our undergraduate curricula.

George E. Crossen,
Oregon State College

**HISTORY OF PHARMACY SYMPOSIUM
AS A PART OF THE CENTENNIAL OF THE
UNIVERSITY OF WISCONSIN**

The University of Wisconsin celebrates in the academic year 1948-49 the centennial of its founding by a number of symposia devoted to the sciences and professions which have been taught and cultivated on the campus.

The undersigned thought it in the interest of American Pharmacy on the whole, to secure for pharmacy and its history a place among these events the planning of which secures for them national attention.

It is for this reason that we decided to replace the "Seminar for Teachers of the History of Pharmacy" planned by the American Insti-

(continued on page 329)

Increasing the Usefulness of the House Organ

The so-called "house organ" has long been an institution among American pharmaceutical manufacturers. Perhaps the very fact that it has been a part of the drug store scene for so many years has contributed to its gradual decline and decay. For the present institutional publications in pharmacy fall far short of the requirements and ideals of today's professional man. Distribution of some well established house organs has been discontinued recently. It is an opportune time to examine this field of pharmaceutical endeavour.

The fundamental purpose of the house organ, it would appear, is to increase the prestige of the sponsoring manufacturer within the profession to which it is directed. Further, it may be a means of bringing the products of the manufacturer to the attention of the pharmacist and physician. Thirdly, it may be of professional, economic or of general informative value to the recipient. Lastly, it may simply be designed to entertain or divert the professional man.

The first of these objectives is usually attained by merely placing a respectable magazine in the mails. However, the prestige gained by the manufacturer is certainly directly proportional to the materials of value and interest contained in his publication. In fact, the second objective, that of publicizing products, may fail if this first purpose is too lightly regarded. Many house organs are thrown away unread they have lost reader interest by consistently poor previous issues. No one objects to the publicizing of products. If abstracts, monographs or even frank advertisements aid the physician and pharmacist in intelligently prescribing and dispensing the manufacturers' wares, they are fulfilling a valuable function of professionally informative literature.

* Avis. K., "Am. J. Pharm.", 117:400 (1945)

The suggestion here might well be that too often this material is "too little and too late" and that more information of this type should be furnished at the earliest possible date.

The third goal, that of supplying information of a general, economic or professionally fundamental character, is more easily reached. Something of value is contained in every house journal. The difference in this respect between good and bad publications is largely a quantitative one provided reasonably high editorial standards are maintained. However, many literary crimes are committed in the "general interest" type of article, and many pages which could have been devoted to articles of specific value have been wasted on prescription pointers, life stories, state flags, etc. Point four, the entertainment of the professional man, is also the natural result of an attempt to balance a magazine between light and heavy reading material, and to make it attractive with illustration and humor. The value of this approach is probably overestimated by most publishers, for diversion is easily obtained from publications outside the professional field, while pharmacy journals are more often expected to supply information which can nowhere else be obtained.

The usual periodical attempts to meet all four of these objectives with varying degrees of emphasis and success. But it is apparent that many house organs suffer by this diversification of effort. If a consistent "lay-out" is followed, and the same space is allotted in each issue to the various departments, it seems that far too often many of these pages are simply filled with worthless material, while other valuable articles or sections are necessarily condensed to fit the established format. Greater flexibility of lay-out would seem to be the only change necessary to overcome this condition.

The phrase "reasonably high editorial standards" appears earlier in this paper. What should these goals be? Most house publications maintain a double standard—one for medicine and one for pharmacy—and issue separate editions

for each group. It is to be regretted that the editorial level maintained for the pharmacist is much lower than that set for his ally, the doctor. This condition has been criticized before.* A contradiction exists in the policy of a pharmaceutical house when the pharmacist and the doctor should receive the same house organ, and it should be worthy of them both. Here is a golden opportunity to actively foster interprofessional respect and understanding, and at the same time simplify the printing and publishing problems of the manufacturer. Educational and professional requirements in pharmacy have steadily been increased—should not the house organ of yesterday keep pace with this trend, and raise its editorial standards in like manner? Let us hope that the present decline of the institutional publication will not result in its further abandonment, but rather encourage re-examination of its purpose and values, giving rise to a new era of improved service to manufacturer, pharmacist and physician alike through the development of a single, well planned, superior house organ.

Edward S. Brady II,
University of Southern California

**HISTORY OF PHARMACY SYMPOSIUM
AS A PART OF THE CENTENNIAL OF THE
UNIVERSITY OF WISCONSIN**

(continued from page 326)

tute of the History of Pharmacy for July, 1948, by a History of Pharmacy Symposium entitled "History of Pharmacy and Society," to be held on the campus of the University of Wisconsin in November, 1948.

There will be a number of nationally known men speaking on topics of general interest. There will be a banquet and an exhibit. One morning will be devoted to a discussion of the problems connected with teaching history of pharmacy which were to be dealt with on the Seminar planned originally.

Everybody is invited to attend this Symposium, which we hope, will be an affair worthy of and helping the reputation of the profession.

Dr. Arthur H. Uhl, *President*
American Institute of the
History of Pharmacy

The President's Page

Teamwork

Everybody is familiar with the old saying: "To be prepared is all." It sounds very simple. It is, however, one of the most difficult matters on earth. One must know the type of situation for which one has to be prepared. In other words, we have to watch the signs of the time in order to be able to meet the future demands which they portend. This is of particular importance in the case of the educator. He has not only to be prepared himself, but his is the responsibility for the adequate preparation of young people for the tasks awaiting them.

Let us look at "the signs of the time" as they have become obvious in recent developments. The October, 1947, issue of this Journal (Vol. XI, No. 4) reported the creation of a "Medical Service Corps as Part of Regular Army". We all know of the antecedents of this new corps. For almost a century, since there has been organized pharmacy in the United States the profession has fought for the proper recognition and use of its activities and potentialities in the armed forces of this country. Then, finally, the great moment had come. Congress had passed and the President had signed a law creating a special Pharmacy Corps. The American profession of pharmacy was jubilant. Then disillusionment and even embitterment set in. The law remained a dead letter. Why? Some say it was the resistance of the "Brass Hats" unwilling to give to pharmacy the recognition which it deserves. Others feel the law was a fulfillment of ambitions of yesterday, based on a situation of the day before yesterday. Out of ill and well tempered discussion, out of a very sincere endeavor of all concerned came a solution which gives to pharmacy much more than the adequate recognition of its traditional activities and responsibilities, and, in addition, assigns to the pharmaceutical members of the new corps act-

ivities and responsibilities. Instead of the isolation which a separate Pharmacy Corps would, to a greater or lesser extent, have meant, military pharmacy has become the mediator between and the guardian of highly necessary and valuable teamwork of the services to be rendered by members of the whole range of sciences which are to be utilized for medical purposes within the army. The prominent part to be played in this respect by pharmacy has become obvious by the appointment of the pharmacist as chief of the new "Medical Service Corps."

We have received probably more than we are actually prepared for. We are faced now by a new emergency of greatest importance. Hundreds of positions are now open in the "Medical Service Corps" as well as for analogous services in the United States Navy to pharmacists who are adequately prepared to fill the positions in question. These pharmacists must be able to work as part of a coordinated endeavor with an understanding of the work done by members of the other professions concerned. This is required in order to make this endeavor "a team."

This new pharmaceutical requirement is by no means restricted to the Army and Navy. The same needs and the same duties become obvious in hospital pharmacy in the manufacturing industry and even in retail pharmacy. If the pharmacist is to take advantage of the new opportunities arising from an epoch of specialization which lost sight of the necessity of coordination, he has to be prepared for the part of the coordinator within his realm, for teamwork.

There is no doubt in the fact that the expansion of the pharmaceutical curriculum during the last decade has gone in a direction enabling the pharmacist to better understand the expanding world of science on the whole. Whether or not he has been prepared in particular for the job of coordination, as pointed out, is still an open question. This question will have to be given greater attention by the pharmaceutical educators. The experience now to be gained in the "Medical

Service Corps" will be of the greatest interest not only for the future of pharmaceutical education but for pharmacy as such.

Pharmacy has been given a new opportunity. Let it not be said at a later time that we let it slip because we were not adequate to the task.

Arthur H. Uhl

A CITATION

Dean Lyman,

Reading your biography I came upon the interesting statement that in your early youth you earned a living by working as a lamp lighter in your native town.

This brought to mind a little poem written by Robert Louis Stevenson Balfour, entitled: "The Lamp Lighter."

In this poem he describes a little boy sitting next to his father at the window of his home, watching the lamp lighter as he lights the lamps and sheds light upon the countryside. The little boy envies that work and asks: "Daddy, when I grow up, can I be a lamp lighter too."

Now I am certain that you were that little boy, if it were chronologically possible; or if it is not chronologically possible, you were just like him. For, as you grew up you became a lamp lighter—and more—you remained one during all of your long and useful life.

As an educator, you illuminated your students' minds and fired their enthusiasm for study and research.

As an editor, you shed the light of guidance and information throughout the land.

In the councils of your colleagues, your lamp became a torch emitting red hot sparks that often burnt and seared and scorched—but always made for progress.

Now, this evening, all that light comes back to you as a concentrate in the form of yellow gold; it is the Remington Medal, a distinguished reward and the highest honor that can be bestowed upon any pharmacist in the United States.

It is our hope that the yellow light which it emits will always remind you of the appreciation that pharmacy has for your work and the admiration of your rugged personality.

This medal makes you a member of a small selected group of men whom I like to call the immortals in pharmacy and bestows upon you the proud designation "Remingtonian."

Now, speaking for the New York Branch of the American Pharmaceutical Association, I have the honor of presenting the medal to you with sincere congratulations.

Curt P. Wimmer

The Editor's Page

A great deal has been said in recent years about the education of the educator. It is well that it should be so, for the educator must always lead whether he be an administrator or a teacher or both. Leadership is expected of him by both the profession he represents and the public which that profession serves. The question is, what can the educator do to best keep himself prepared for this leadership. Within the year it has been suggested that each member of the teaching staff, and especially the deans, work full time for a period of not less than six weeks every three years behind the counter of a drugstore. This is not the first time such a suggestion has been made. I am reminded that a number of years ago one of the most distinguished deans of a famous midwestern university told me he had spent the summer working in a drugstore and asked if I did not think that was a good thing for a dean to do. My reply was that when a man had grown so that he was worthy of occupying the high office of a deanship, if he could not do something in the summer months that would better qualify him for leadership than to work in a drugstore, I thought that dean was in a bad way and his college was in a worse one. Then he confided in me the real reason for the drugstore experience. His brother-in-law was the proprietor of the store. He was worn out by years of confinement, and he needed a rest in the north woods. From that point of view, the dean was to be commended for his service; but from the viewpoint of increasing his own administrative efficiency, or bringing inspiration to his students or leadership to his faculty, he had little to offer. Instead he brought to his office and students and faculty a body that was fatigued and a spirit that had lost its buoyancy. All concerned would have been bettered had he spent the summer in fishing or traveling or in delving into the unknown recesses of his own specialty for the pure joy of it. Too frequently the fact is overlooked that the druggist is a specialist, and the operation of a drugstore

is a specialty. The druggist is pharmaceutical education personified. The drugstore is pharmaceutical education in action. As the director of a school I get my inspiration in part by observing a well functioning drugstore as a whole, and in part, and mostly, by my association with the druggist himself. I do not need to stand behind the counter to get the "common touch." I meet the same men at church, in the barber shop, in the grocery store, and on the street. I get the "common touch" from the men I live with. It is the uncommon touch that I need. I get it by sitting around a table with a small group of my druggist friends from the city of Tucson and listening to the discussion by these specialists in drugstore operation in their respective and ever-changing locations, and when I leave the table I find I am infected with the virus of new ideas and am bursting with enthusiasm; and I go back to my work with a new charge of energy and a brighter and enlarged outlook for the future. What is even more important, I have for my druggist friends a deeper respect, a sense of comradeship, an abiding affection, and a gratefulness for what they had done. They had unconsciously, in a most magnificent way, contributed to the education of the educator.

In these later years much stress is being placed upon so-called commercial courses in pharmacy. The Editor realizes the value of basic courses in economics and business management not only to pharmacists, but to those engaged in every phase of human activity. Nevertheless he questions the wisdom of introducing them into our present pharmaceutical curriculum. Colleges of commerce and business administration have been developed in our universities for teaching in these specialized fields, and if pharmacy students wish to take them and if they have the time available in addition to the standard courses in pharmacy, they would be benefited by taking them where they are best taught. If we are to have a business course in the pharmaceutical curriculum the Editor has long maintained that the fundamental business course is English. Considered as a purely business course English is the most fundamental course of all. In the January 24, 1948

issue of the Journal of the American Medical Association, page 256, Dr. Lawrence M. Gould, an eminent geologist, who is himself the president of liberal arts college, comes to the support of the use of the English language as the brand of the educated man. The medical commentator quotes and supports Dr. Gould who says in substance that the mother tongue must be the chief concern of a liberal education, and the basic characteristic of an educated man is that he "be literate and articulate in verbal discourse". That applies to the written line as well. Dr. Gould also says if he could have his way he would require four years of English of all students in college, with a considerable number of extra courses and a considerable amount of composition in the senior year for all students who think they want to become scientists. We agree with that statement also for all students who think they want to become pharmacists, provided these courses are of such a nature as to actually improve the student's diction so he can express himself clearly, forcibly, and convincingly. Speaking out of our own experience, we can say that taking any number of English courses will not accomplish these objectives in themselves. The student still finds the use of his language becomes his own personal problem and can be corrected only by his own personal effort to his own spoken word. The most intelligent layman cannot tell whether a man is a good pharmacist by the way he compounds a prescription, but he judges his professional ability by the type of language he speaks. Poor language never breeds confidence. The medical commentator says that if the medical student would learn to speak good English it would not work against him, and at least some of his instructors could understand him. On the other hand, the Editor could also say, out of the experience of a long life, both as a student and as an editor, that if some of his instructors had used better English he would not only have understood them better, he would have had more confidence in them. And that applies to pharmaceutical instructors and writers as well. After having said all of this in behalf of and in defense of better English courses, we think the place for the students to acquire the necessary knowledge and the the habit of speak-

ing and writing good English is in the home and in the school and college level before he enters upon a professional course—be it pharmacy, medicine, dentistry, law or religion.

Many years ago I created the slogan, "The Menace of Women to Pharmacy." The record of women in pharmacy in these latter days has rendered that slogan obsolete. On another occasion I created another one, "The Menace of the Retail Druggist to Pharmacy". This slogan was created in the days when many practicing pharmacists were belittling the dignity and the work of their own profession. It was in the era when a student went into a drugstore and with great pride announced to the druggist that he was studying pharmacy. He expected to be rewarded with a word of cheer and a spirit of professional fellowship. He was not. Instead the druggist said—"What in the hell are you doing that for?" The realization by the rank and file of the retail druggists of this country that they represent an ancient and honorable profession which has become, in these days of modern medicine, the equal of any other health profession makes the second slogan antiquated. But now comes a new menace and a new slogan which reads—"The Menace of the Leaders (?) of American Pharmacy to Pharmacy". The act that provoked the creation of this was a resolution which came out of the annual joint conclave of the Council of the American Pharmaceutical Association and the Executive Committee of the National Association of Retail Druggists at Washington on January 22, 1948. The Resolution:

"Resolved that the Council of the A. Ph. A. and the Executive Committee of the N. A. R. D., in joint assembly, express the belief that general inauguration of a compulsory five-year course in pharmacy should be deferred until the need can be more definitely shown and until the general opportunities open to pharmacists more clearly justify such an extension of the course, and be it further

"Resolved that the colleges of pharmacy be urged to examine critically the present curriculum for the

purpose of deleting obsolete material so that more time can be given to courses necessary to an understanding of modern therapeutic agents and so that the curriculum will be more suited to the needs of modern pharmacy as it reflects current medical practice.

"This resolution is not to be construed as indicating opposition to pioneering work by colleges adequately prepared to handle a course longer than the standard four-year course.

In the first place, in order to keep the record straight, no one is asking for a five-year course in pharmacy. We are asking for a *four-year* course in pharmacy. We are asking for one year of college training as a requirement for the study of pharmacy rather than a 15 point high school course which we now have. It is necessary to keep this distinction in mind if we are to parallel the pharmacy program with that of medicine and dentistry. What we want is a *four-year* course in *Pharmacy* that is *pharmacy*. We do not have it now. We could not convince the War Manpower Commission in the last war when we asked for deferment of pharmacy students that we had a *four-year* course in pharmacy. It is not probable we can do better with a similar commission in the next war unless we change our program. And as I have said on a previous occasion, if we want deferment of pharmacy students in the next world war we better have a *four-year* course in *pharmacy* before the shooting begins. In the second place, the assembly suggested that a longer preparation for the study of pharmacy "be deferred until the need can be more definitely shown and until the general opportunities open to pharmacists more clearly justify an extension". This, in substance, is the identical argument I first heard just forty years ago in 1908 when I had my first introduction to a meeting of the American Conference of Pharmaceutical Faculties at Hot Springs, Arkansas, when a suggestion was made that the requirement for the study of pharmacy be increased from one year of high school to two. That feat, however, was not accomplished until the Battle of Detroit in 1914. I heard the same argument later

when we went from a two year high school requirement to a three, and again when we went from a three year to a four. I heard it again when we went from a two year college course to a three, and again when we went from a three year college course to a four. That was in 1932. Sixteen years later it bobs up again and from a source where we have a right to have more constructive thinking, and especially when the assembly requests in the same resolution that *"the colleges of pharmacy be urged to examine critically the present curriculum for the purpose of deleting obsolete material so that more time can be given to courses necessary to the understanding of modern therapeutic agents so that the curriculum will be more suited to the needs of modern pharmacy as it reflects current medical practice."*

That is exactly what we have been doing for sixteen years, and how much progress have we made? It is exactly parallel to trying to play a game of checkers with four checkers and with only four black spots on the board. How much progress in the game could be made in creating new moves under such limitations? We have been playing on such a pharmaceutical checker board for sixteen years. Is there any hope of creating new moves in another sixteen years? The assembly seems to think that there are "some general opportunities" which will "open to pharmacists" that do not now exist. These opportunities have existed since time began. We have not developed our educational program to meet them. The increase of educational requirements from a one year high school course to a four year college course has been the only factor that has enabled us to meet the responsibilities which the opportunities have offered. If the pharmaceutical requirements of 1908 had been maintained as the standard of pharmaceutical education, both pharmaceutical education and practice would now be buried in an unmarked grave.

The time has come when those who advise us on curriculum matters should quit speaking in generalities and get down to brass tacks. For example, why not examine the pre-

sent curriculum and tell us exactly what is the obsolete material that should be deleted that is not necessary for the understanding of modern therapeutic agents or for the needs of modern pharmacy as it reflects current medical practice; and in addition tell us exactly what should be substituted in the place of these deletions that will accomplish the objectives which the resolution suggests. In doing so, care should be taken that nothing should be deleted that is necessary to the understanding of what is added. I am sure educators will appreciate such collaboration. Finally, the soothing statement in the last paragraph of the resolution stated above is no palliative for the sock in the eye that the assembly gave pharmaceutical education in the first paragraph of the resolution. The year of prepharmacy training is the responsibility of the much maligned college of liberal arts. It is not a problem of the college of pharmacy.

Now it becomes my turn to give the assembly of the leaders in our national organization some soothing syrup of my own compounding. They are not the worst antis of progress in pharmaceutical education. Pharmaceutical educators(?) have driven me to create the most painful slogan of my career, namely, "The Menace of Pharmaceutical Educators to Pharmacy." The basis for such a slogan is to be found in the report of the Committee on Curriculum of the A. C. C. P. and the recommendation of the Committee on the Five Year Program, both of which appear in the October, 1947, issue of the *American Journal of Pharmaceutical Education*. The full report of the latter committee appeared in the July issue of the *Journal* of the same year.

There are some perfectly amazing statements made in the first report referred to. For example, when it says, "There exists no body of evidence to show that a longer period of time is required for the teaching of the fundamentals of the sciences", this indicates a lack of the study of pharmaceuticals history. If one should study the history of the efforts of the Committee on Pharmaceutical Syllabus through all these

years he would learn of the tremendous amount of effort which has been put forth by a good cross section of the most constructive thinkers in pharmaceutical education and practice to integrate the courses. This study resulted in the abandonment of the Syllabus because the checker-board was too small to accomplish integration. To say that the difficulties with the four year curriculum have been due to a lack of careful planning and integration of old courses from the two and three year curricula into the framework of the four year curriculum is both a mis-statement of fact and, if true, it is an incrimination of those pharmaceutical educators who have been asleep at the post for sixteen years. Finally, the Committee on Five-Year Program urges us to continue to play checkers on a four spot board "until the relevant factual information from The Pharmaceutical Survey is available". The time has come when pharmacologists should take note of the fact that a new narcotic has been discovered and must be included in our texts. First and oldest are the narcotics of the opium series. A close second are the narcotics of the methane series; and now the latest narcotic—*The Pharmaceutical Survey*. I have experienced the narcotic action of other surveys, but the narcotic effect has been less intense than in the case of the present one.

The Pharmaceutical Survey has had no more loyal supporter than the Editor of this *Journal* through its pages. I am no prophet as to all The Pharmaceutical Survey will reveal. But this I do know—that if it places a damper upon progress in pharmaceutical education and limits its field of action so as to make its program static, our schools of pharmacy will end up being trade schools and pharmacy cannot take a dignified position as a health science.

Now let me give a practical example of what these reports of the Committee on Curriculum and the Committee on the Five Year Program have done to pharmaceutical education in the state of Arizona. When I came to Arizona in September, 1947, to implement instruction in pharmacy into the pro-

gram of the University of Arizona I found it was an impossible task to integrate the standard courses in pharmacy into the program and get the proper sequence of courses in a four year schedule. By placing English, general chemistry, and general biology in the prepharmacy year it was not only possible to get the proper sequence in the professional curriculum, but it made possible the introduction of certain courses which would be of tremendous value in rounding out the students' undergraduate training. The committee of the College of Liberal Arts saw the advantage of the prepharmacy program and approved it. The University administration, every member of the faculty who would have any contact with pharmacy students approved it. The state board of pharmacy and the most influential druggists in the state were sympathetic with it. However, before it could be presented to the general faculty for approval some member of the committee discovered the attitude of the two committees of the A. A. C. P. referred to above by reading the reports in the *Journal*. The committee reversed its action because from these reports they sensed that the "leaders in pharmaceutical education in the United States were not sympathetic toward prepharmacy training". In other words, progress was blocked by the committees of the association which declares in Article II of its constitution—"The object of the Association shall be to promote pharmaceutical education and research". When will we ever learn to quit being our own worst enemy! Just one week later the Arizona Pharmaceutical Association in convention assembled in Phoenix, passed the following resolution unanimously,—

"Resolved that the Arizona Pharmaceutical Association, in convention assembled, request the University of Arizona to require in addition to a 15 point high school course, one year of prepharmacy training for entrance to the School of Pharmacy of the University of Arizona".

I am more convinced than ever that the retail druggist is not only the backbone of American pharmacy, but that he also has

a superior viewpoint as to what must be done to place his profession on an equal basis with other health professions. He knows that *too little* and *too late* may happen in education as well as in war.

A press release, dated March 18, 1948, from the Department of the Army, Office of the Surgeon General, indicates the tragic conditions of the health of the young men of the nation as revealed by the Selective Service examinations which revealed their mental and physical fitness during the last world war. Prior to the cessation of hostilities 16,000,000 men between the ages of 18 and 36 were examined and 4,828,000 or 30 per cent, were rejected because of mental or physical defects. Following hostilities when the standards for existing minimum literacy were raised to the equivalent of a fourth grade educational level the rate of rejection increased to 37 per cent. During this period about one-third of the white registrants and almost 60 per cent of the colored registrants were rejected for these reasons. Neuropsychiatric disorders were the largest single cause for rejections. They constituted about 12 per cent of all those examined and 38 per cent of all rejections for all causes. Psychoneurosis was the principal cause among whites and a psychopathic personality the chief disorder among the colored. There were 1,000,000 neuropsychiatric admissions to Army hospitals during the war. There were 382,000 disability discharges for neuropsychiatric reasons, representing 39 per cent for all those discharged for mental and physical defeats. However, all these men received benefit from hospitalization and 80 per cent are now gainfully employed. It is estimated that 2 in every 20 adults in America will need psychiatric help and 1 in 20 will spend some part of his life in a mental hospital.

The second most important cause for rejections were muscular-skeletal defects which constituted 6 per cent of the total. Disorders of the eye, ear, nose and throat constituted the third leading cause of rejections, 30 men being rejected out of every 1,000 examined. The fourth cause of importance

was cardio-vascular disease which accounted for 22 rejections out of every 1,000 men.

The incidence of rejection for other leading infirmities per each thousand men examined was: syphilis, 17; pulmonary tuberculosis, 9; gastro-intestinal disorders, 8; genito-urinary disorders, 7; and respiratory disease, 9. The figure for syphilis includes all men found to have the disease through 1942 and not subsequently called up, and after that year only those having cerebrospinal, cardio-vascular or visceral syphilis. Syphilis would have played a greater role had the standard not been lowered.

Thus, to summarize the Selective Service data, three out of every ten men between 18 and 38 years of age were found to be unfit for military service due to mental or physical reasons. The four leading causes for rejection were mental conditions present in 12 out of every 100 examined; musculo-skeletal in 6 out of each 100; eye, ear, nose, or throat disorders in 3 out of every 100; and cardiovascular disease in 2 out of 100.

Now consider in addition to these rejections the one million men discharged from military service for disability. The sum is not an encouraging picture of our manpower situation today.

Surgeon General Bliss calls attention to the seriousness of this situation and goes on to say that detailed studies are under way to establish methods for the complete use of manpower in a future emergency. The real problem is more fundamental than that. It is the problem of the health sciences and the educational system and the religious forces of the nation to produce a higher standard of health and morals of a whole people so we will not have this backlog which the Surgeon General pictures so vividly, when any emergency arises. It's something that cannot be done in time of war—it is a peace time job. In this no profession has a greater opportunity for service than the body pharmaceutic. One of the first steps in

declaring our intention to play a major part in this program would be to make the drugstore take on the appearance of a health agency. To get down to brass tacks again, the first step to accomplish that end might well be to quit making the drugstore look like a tobacco shop or a liquor emporium. There is no convincing evidence that either has ever contributed to the building of either a physically or morally healthier race.

The passing of Josiah Kirby Lilly and of Josiah C. Peacock removes from the field of pharmaceutical activity two of its most colorful and most loveable figures in American Pharmacy.

Mr. Lilly's numerous accomplishments in the fields of pharmacy, literature and the arts need no comments here. Neither do his interests in cultural activities and everything that was wholesome for the uplifting and development of character in young men and women. Through his great manufacturing concern he made it possible to prolong the usefulness and lives of millions of men, not only in his day but in the years to come.

Mr. Peacock was an equally versatile man. Through a long life he served the manufacturing industry in many ways, and as a teacher he was notable. I like to think of him best in his capacity as a retail pharmacist in Philadelphia. In the early days of the century I remember well how he discussed with bubbling enthusiasm in our meetings the researches which he, as a practicing pharmacist, carried out in his store. He demonstrated above all men what the creative mind can do in the actual practice of his profession. Every time I met Mr. Peacock he produced in me a burning desire to be a retail druggist. Such men bring both dignity and romance to their profession.

It was not my good fortune to have been intimately associated with Prof. Harry W. Mantz; but knowing of his eager desire for learning, his industry in planning and administering the institution of which he was a part, and the respect and affection which his students and his colleagues had for him, I felt a great sense of loneliness and personal loss when I learned of his passing on Christmas day, 1947. Christmas time is a period of great joyfulness, It might seem a tragedy to have such a loss on the day that brought joy to the world. But to me it shall not be, for on every Christmas morning as the strains of the of the angels' song—Peace on Earth, Good Will to Men—drifts through the air, I shall remember Harry W. Mantz and his contributions to his students, to his colleagues, and to his profession. We shall not sorrow, for the promise and the triumph of Easter lies ahead.

Rufus A. Lyman

NEWS IN THE FAMILY

Laura Lenore Logan.—Born February 15, 1948, daughter of Mr. and Mrs. Harry Logan, Brooklyn College of Pharmacy.

Marvin Alan Kaplan.—Born January 26, 1948, son and first child of Mr. and Mrs. Leo Kaplan, Brooklyn College of Pharmacy.

Charles Herman Forslund.—Born July 22, 1947, son of Prof. and Mrs. Herman Forslund, Oregon State College.

Zella Irene Cwalina.—Born November 27, 1947, daughter of Dr. and Mrs. G. E. Cwalina, Purdue University.

Doris Beverly Hawkins.—Born November 9, 1947, daughter of Mr. and Mrs. Reeves Hawkins, University of North Carolina.

Monte Sue Reese.—Born February 26, 1948, second daughter of Dean and Mrs. J. Allen Reese, University of Kansas.

Kathryn Ann White.—Born February 23, 1948, third daughter of Dr. and Mrs. Allen I. White, State College of Washington.

Kristin JoEllen Fiske.—Born February 21, 1948, daughter of Chief Pharmacist and Mrs. Russell H. Fiske, Medical College of Virginia.

Robert Rettig Kaufman.—Born March 17, 1948, son of Dr. and Mrs. K. L. Kaufman, Medical College of Virginia.

Pamela Jane Keagle.—Born March 16, 1948, daughter of Dr. and Mrs. LeRoy Keagle, Rutgers University.

Carlyn Marie Riedesel.—Born August 1, 1947, adopted daughter of Mr. and Mrs. Carl C. Riedesel, nUniversity of Nebraska.

Gleanings From the Editor's Mail

We have just discovered some unfortunate draftsmen's errors in Charts 3 and 10 of our paper "Abilities and Interests of Pharmacy Freshmen" which is due for publication in an early issue of your *Journal*. If it is not too late, the following errors should be noted:

Chart 3: The frequencies for colleges numbers 27, 28, 29, and 30 should be 90, 60, 24, and 44, respectively, rather than 27, 90, 60, and 24 respectively.

Chart 10: The college number for the ninth bar from the right should be 33 rather than 38.

H. H. Remmers, Director
Student Personnel Studies

An error was made in listing the officers of the Conference of Teachers of Pharmaceutical Economics in the October issue of the *Journal*. The officers for the academic year 1947-48 are: Thomas D. Rowe, Chairman; Charles W. Bliven, Secretary; Joseph H. Goodness, Representative on Committee of Conference of Teachers.

To Prof. Zopf:

I am happy to enclose check to cover my subscription to the *American Journal of Pharmaceutical Education*. Of all the pharmaceutical publications which come to my desk, and this includes most of them, none has the appeal which the *American Journal of Pharmaceutical Education* exerts. It is a stimulating, constructive, and a wholesome publication, the reading of which is a great joy.

New York
January 27, 1948

Robert L. Swain,
Editor, Drug Topics

An examination for the purpose of selecting candidates for appointment as pharmacist officers in the Regular Corps of the Public Health Service is scheduled for June 21, 22 and 23, 1948.

The closing date for receipt of applications for this examination has been set for May 21. Individual inquiries of applicants are to be directed to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

The Service would like to work with and through the deans of the accredited colleges in alerting the outstanding young pharmacy graduates and senior students to the opportunities now open to professional pharmacists for careers in public health activities. We ask your co-operation in aiding the U. S. Public Health Service to build a truly professional corps in which the profession of pharmacy may take a justifiable pride.

Washington, D. C.
March 10, 1948

George F. Archambault, Pharmacist
Chief, Pharmacy Section
Hospital Division

I am very much interested in your letter of recent date (concerning when pharmaceutical instruction was begun at University of Michigan) and I am glad to try to help out in the matter of giving you statements from the Regents' Proceedings and also from History of the Chemical Laboratory of the University of Michigan, by Edward D. Campbell. (See Miscellaneous Items of Interest). There seems to be some doubt as to when Dr. Prescott personally began teaching pharmacy, but there seems to be no question but that pharmacy was first taught in conjunction with courses in analytical chemistry as early as 1860. We are in possession of an old, beautifully written notebook that belonged to James W. Patterson, in which he has inscribed considerable material on pharmacy as taught by Prof. S. H. Douglas. This notebook bears the date 1864.

Ann Arbor
January 20, 1948

Charles H Stocking

I believe that one of the major responsibilities that we older people have is to aid the student in finding the field in which he can be most efficient and will find the work pleasant. In order to accomplish this, I feel it is necessary for each of us in the different branches of pharmacy to work with the educators, keeping them closely informed as to the nature of our work and the opportunities present, as it is really they who play the major part in shaping and directing the future of the student. The paper, "Industrial Pharmacy—Opportunities & Training",

was prepared in an attempt to present such information regarding the field of manufacturing pharmacy. Complete data can only be obtained when it is possible for each manufacturer to supply a careful job analysis of each position that can be advantageously filled with a man having pharmaceutical training.

Philadelphia, Pa.
January 21, 1948

Rudolph H. Blythe

It is my impression that some years ago the Association voted that all committee chairman should prepare separate copies of any recommendations they wished to make so that they might be turned over to the Committee on Resolutions on the first day of the annual convention regardless of when the report itself was to be presented. If no such action has been taken, would it not be a good thing to do? At best there will be some recommendations that cannot be ready in advance, but committees appointed in the fall have ample time to formulate theirs by convention time and making separate copies of them would be a simple matter.

It is hardly within my province to make suggestions, but studying the recommendations as I have in preparing indexes has made me realize that the Committee on Resolutions has a difficult task and, if possible, some means should be found to make it easier. Would it help to say something in the *April Journal*, directing attention to the possibility? July might be too late.

Villisca, Iowa.
February 20, 1948.

Zada M. Cooper

Corrections Requested

After seven years of steadily growing recognition and use, proved by the fact that during this time the book had to be reprinted three times, a

New, Revised Edition

is to appear.

Some obvious mistakes, typographical and other ones, were corrected in the reprints mentioned above. Other ones may still be unknown to the author but detected by others.

The undersigned is appealing to everyone who has read or used the Kremers-Urdang, History of Pharmacy, especially to those who have used it as a text, to let him know any comments, corrections or suggestions which might help its further improvement.

The author and the publisher are deeply aware of the responsibility towards American pharmacy and its reputation, and towards the younger generation whose concepts are, to some extent, to be molded by this book. It is for this reason that they think themselves entitled to ask the profession on the whole, and especially the pharmaceutical educators, for their cooperation.

George Urdang,
University of Wisconsin
Madison, Wisconsin

Notes and News

The University of Arizona, School of Pharmacy.—The total registration for the second semester is 86.—Messrs. Myron and Ben Fink of the Pennington Drug Company of Tucson have established an annual prize of \$100 to be awarded to the student making the highest scholastic grades in the course in dispensing. Since such a course will not be given until the academic year 1949-50, the donors have asked that the award during the intervening years be given to the student making the highest grade in the sophomore class.—The Zonta Society of Arizona is sponsoring a campaign to raise \$18,000 as an endowment fund, the proceeds from which are to be used to foster scholarship among the young women registered in the school of Pharmacy. The cash offerings to date amount to \$1,125.—The Women's Auxiliary of the Arizona Pharmaceutical Association is raising a fund of \$2,500 to equip a room in the new pharmacy building for the special use of the women pharmacy students. The fund has now reached the \$900 stage.—Mr. Andrew Martin, one of the leading druggists of Tucson and the state of Arizona, chartered a Greyhound bus to take the students to the annual meeting of the Arizona Pharmaceutical Association at Phoenix on April 27. Two of the students, the members of the faculty, and Dr. Robert L. Nugent, Vice President of the University of Arizona, had a part in the program, as also did Mrs. Fanny May von Steinwehr of Tucson, who spoke on the Zonta Society's project in establishing scholarships for young women in pharmacy.—Construction on the new pharmacy building was begun in early April. It is planned to have the building completed by the beginning of the second semester of the next academic year.

University of Buffalo, School of Pharmacy.—At a meeting of the State Boards and Colleges of Pharmacy of District No. 2, which was held in New York City in March, Dean A. B. Lemon presented a report on a new type of state board examination which has been adopted for licensing in New York State. A sample examination was presented for purpose of discussion. Dean Lemon has been appointed chairman of a committee which will function under the auspices of the New York State Board of Pharmacy for the purpose of preparing suitable examinations of the new type. The New York State Board has given official approval to the new type of examination and plans to place the examinations in use by June of 1949. In the type of examination proposed, subject matter titles will be abandoned and the questions will be adapted to machine scoring. The questions selected will be in keeping with the objectives of a licensing examination.—The annual Spring Clinic of the School of Pharmacy will be held at the Hotel Statler in Buffalo on Tuesday,

April 20.—Dr. Samuel Goldstein of Baltimore, Maryland, recently spoke before a combined meeting of the Buffalo Pharmaceutical Association on the subject of prescription tolerances.

University of Cincinnati, College of Pharmacy.—Dr. Carl Swisher addressed the Cincinnati chapters of Alpha Chi Eta and Iota Sigma Phi in January and February respectively. He discussed important and interesting phases of crystallography with emphasis on the identification of chystal forms and systems by microscopical study. He illustrated the lectures by the use of crystal models which he constructed for this occasion.—Dr. Lauretta Fox recently attended the Atlantic City convention of the federated biological societies, teachers, and workers in biology and its related fields.—The junior and senior classes will be the guests of Parke, Davis and Company at their plant in Detroit in May. —The Cincinnati chapter of the A. Ph. A. was recently the object of reorganization under the sponsorship of the Cincinnati College of Pharmacy. This group is separate and distinct from the student branch, but the two organizations will continue their close cooperation as before. The officers of the Cincinnati chapter are John S. Beatty, president; David Uhlfelder, treasurer; and Simon Mendelsohn, secretary.—The exterior of the pharmacy building has been renovated in preparation for the annual open house which is to be held in April in order to exhibit the activities of the school.—In a forthcoming issue of the *Ciba Symposia*. Prof. Simon Mendelsohn will present the historical phases and public health aspects of human cremation.

Columbia University, College of Pharmacy.—Dr. Elliott Emerson Leuallen, newly appointed to the pharmacy staff, will assume charge of the Division of Pharmacy, July 1, 1948. Dd. Leuallen holds the D. Sc. in Pharmacy from Philadelphia College of Pharmacy and Science. His teaching activities include: instructor in pharmacy, University of Beirut; instructor and assistant professor of pharmaceutical chemistry, Philadelphia College of Pharmacy; war service as instructor in chemistry, Drexel Institute and Villanova College. He is pharmacy editor of *American Druggist*; associate editor of "U. S. Dispensatory, 24th Edition"; an associate editor on pharmaceutical and chemical material, "Gould's Medical Dictionary"; and collaborator, "Remington's Practice of Pharmacy, 9th Edition".—The class of 1922 has established the Samuel B. Reiman award of a suitably inscribed "United States Dispensatory" to be given the president of each graduating class beginning with June, 1948.—Louis Manna, B. S. 1938 and Plaut Fellow 1938, executive officer of control laboratory, Joseph Seagram and Sons, is in residence at the Agricultural Experiment Station of Purdue University as a candidate for the Ph. D.—Messrs. Arthur Sarrazin and Loc Choquette, pharmacists in Montreal, visited the college recently to

discuss pharmaceutical curricula and licensing examinations.—Scholarship assistance for the spring session of 1947-48 has been granted Roy C. Barnett, Saul Mandel and Bernard Misek.

University of Connecticut, College of Pharmacy.—Prof. Walter R. Williams presented a paper, "The Place of Chemistry in the Pharmaceutical Curriculum", at a meeting of the New England Association of Chemistry Teachers which was held at Saint Thomas Seminary in Bloomfield in March.—The second annual refresher course program for pharmacists, sponsored by the Connecticut Pharmaceutical Association, was conducted the last week of March. The lecturers for the sessions were Profs. Nicholas W. Fenney, Wallace F. White, of the faculty, and Edward C. Burt, a practicing pharmacist.—An article, "The Female of the Species", by Eleanor Orsini, 1945, pharmacist at Saint Mary's Hospital, Waterbury, appears in the current issue of *Tile and Till*.—Speakers in the series of special lectures for juniors and seniors during the spring semester have included: Dr. Gopal Korandeker, of India, who spoke on pharmacy in India; John J. Dugan, Dr. Marvin R. Thompson, Neely Turner, entomologist at the Connecticut Agricultural Experiment Station; Dr. C. B. Taft of the Schenley Laboratories; and Louis Kazin.—Prof. Wallace F. White attended the annual meeting of the American Association of Pharmacologists at Atlantic City in March.—Dr. Henry S. Johnson, attended the mid-winter meeting of the executive committee of the American Association of Colleges of Pharmacy and the American Council on Pharmaceutical Education which was held in Washington, D. C., in February.—Margaret Adams of Ansonia was recently awarded the Dr. Georges Bolles prize for maintaining the highest general average for the first two years of the college course. During the first half of the present school year Miss Adams earned a perfect score of forty quality points.—At the close of the first semester forty-five students out of a total enrollment of two hundred and thirty were placed on the honor roll.—The faculty tendered a reception and tea to Dr. Edward C. Elliott of Washington, D. C., on his visit to the school in January.

Detroit Institute of Technology, School of Pharmacy.—Howard Hanmer has resigned and is operating his own store in Hart, Michigan. The vacancy on the teaching staff is being filled by J. Verne Crandall who has returned to teaching after having spent several years in the manufacturing field. Mr. Crandall will also assume a portion of the administrative work in the capacity of associate dean.

Duquesne University, School of Pharmacy.—A Pharmacy Research Club, with membership from the junior and senior classes, has been organized for the purpose of acquainting the students with the methods and technics involved in research and to encourage the application of

these technics in the every day practice of pharmacy. Research studies are being carried on by each member. Three problems are now being studied: 1. The preparation of new medicinal agents; 2. Investigation of newer methods of compounding prescriptions; 3. Investigation of educational technics.—The Alpha Beta Chapter of Rho Chi has planned a series of inter-professional meetings for the current year. The chapter will play host to other honorary professional groups in order to create a closer relationship with the allied professions. To direct attention to the work of the Alpha Beta Chapter of Rho Chi in helping to maintain a high standard of scholarship in the School of Pharmacy and to commend the society and encourage it to continue its endeavors, the Very Rev. Francis P. Smith, C. S. Sp., president of Duquesne University, has proclaimed April 13 Rho Chi Day. It is planned to make it an annual affair occupying a permanent position on the University calender. The chapter has also instituted an annual prize award of \$10.00 for the highest ranking freshman.—Joseph Zapotocky, assistant professor of pharmacy and chemistry, received the Ph. D. degree from Ohio State University on March 19, 1948.—The former biology building is being converted into a pharmacy research building. It will contain an animal room, student research laboratories, and seminar room.

University of Florida, School of Pharmacy.—Dr. Elbert Voss has been appointed head professor of pharmacology and pharmacognosy, effective July 26, 1948.—The following have been elected to membership in Rho Chi: Lester T. Crews, Henry D. Johnson, Robert L. Lamb, Roy M. Lanier, Elmer H. Maurer, and Lloyd C. Peeples.

Fordham University, College of Pharmacy.—The last class under war time acceleration was granted on February 4. Sister Jean Louise Thomas, S. C. N. received cum laude honors.—Dr. Wilbur E. Powers, secretary of the New Jersey State Board of Pharmacy, addressed the Student Branch of the A. Ph. A. at its last regular meeting on licensing and reciprocity, explaining in detail the internship required by the state of New Jersey before a license is granted.—An alumni meeting was held in March with Dr. Jules H. Weinstein, a practicing dentist, as guest speaker. His lecture on the medical aspects of hypnotism was followed by a practical demonstration which was both impressive and mystifying.—Members of the Student Branch of the A. Ph. A. and faculty visited the laboratories of Lederle Division, American Cyanamid Company at Pearl River, New York on March 17.—During the Easter holidays, 43 senior and graduate students were the guests of Parke, Davis and Company at Detroit and of Eli Lilly and Company at Indianapolis.—The April meeting of the New York Branch of the A. Ph. A. was held at Fordham University. The guest speaker was Dr. Rutledge W. Howard, director of Professional Service, Lederle Laboratories, American

Cyanamid Company. In presenting the topic "A New Advance in the Palliation of Malignancy", Dr. Howard discussed the chemical relationships of Teropterin, the historical aspects of the clinical and laboratory use, and a resume of the work done on human patients.

The George Washington University, School of Pharmacy.—Paul E. Tullar of the pharmacology department attended a meeting of the U. S. P. Subcommittee on Bioassay held in New York in February. Mr. Tullar has been cooperating with the Subcommittee on the pigeon assay for digitalis being considered for inclusion in the next revision of the U. S. P.—Louis Lang of the local organization of drug house representatives addressed the student group in March on "Antihistamine Drugs". This was the third of a series being offered to students by this organization.—Curriculum changes for the year 1948-49 will include addition of a course in epidemiology and instruction in public health; a course in hospital pharmacy, consisting of the organization and operation of a hospital pharmacy and prescription practice; and a course in manufacturing pharmacy which will provide experience in the manufacture of bulk pharmaceuticals. These three courses will be available to the senior class, the first two as required subjects and the last as an elective. The courses in hospital pharmacy and manufacturing pharmacy will be conducted within the new University Hospital.

Idaho State College, College of Pharmacy.—Five men who have graduated at mid-term passed the Idaho board examination in February.—Approximately thirty students will be graduated in June and ten in August.—Plans are progressing for a complete summer session again this year. A poll of students indicated that at least half of them desired to continue on through a nine week summer term. A number of the June graduates are interested in further pharmacy work on the graduate school level. There is also a revived interest among some of the students toward pharmaceutical education as a career.—Gordon Wolfe, who has been on leave directing the activities of his own store, will be back as an instructor in pharmacy in September. Additional teaching staff will be necessary in the department of pharmacology and physiology.—D. S. Guha, an Indian scholar from Benares, who has been assisting in pharmaceutical chemistry, will leave this June to continue graduate studies.—The E. R. Squibb representative from the Seattle office showed the student body the new film entitled "Rx", and followed the showing with an excellent talk on the opportunities of the professional service representative.—The Alpha Zeta Chapter of Phi Delta Chi has held several fine professional meetings at which local druggists and physicians have expressed their view-points on problems of mutual interest.

State University of Iowa, College of Pharmacy.—Hugh H. Keasling and Donald B. Meyers, graduate students, have been appointed quarter-time laboratory assistants for the second semester of the current school year.—New equipment acquired since the opening of the school year for use in the manufacturing laboratory and in the graduate area include a Precision Universal Penetrometer for determining consistency of ointments, a Van Dyke Emulsion Phase Tester for determining emulsion types a Photometer for spectrophotometric analysis and a Stokes Model E Tablet Machine complete with standard equipment including motor, variable speed pulley drive and three sets of punches and dies.—“Prizes for everybody” was the motto on Friday evening, March 5, when the students held the annual Prize Prom in the main lounge of the Iowa Memorial Union. Gifts valued at several hundred dollars were given away during the evening through a series of drawings. Beverly Carlson and a committee of twenty procured prizes from 187 companies throughout the country. Everything from perfumes and tobaccos to cigarette lighters and fingernail polish was included. The Prize Prom, originating in 1931, is one of the big University parties of the school year. Special guests were Pres. and Mrs. Virgil M. Hancher, Dean and Mrs. R. A. Kuever, Dean Emeritus Wilber J. Teeters, Dean and Mrs. Carlyle Jacobsen, Dr. and Mrs. Albert P. McKee, Prof. and Mrs. Stanley Wawzonek, Prof. and Mrs. James W. Jones, Prof. and Mrs. Louis C. Zopf.—Prof. Louis C. Zopf attended a meeting of the Subcommittee on Ointments and Galenicals of the United States Pharmacopoeia in New York City, January 29, 30 and 31. He also attended the joint meetings of the American Council on Pharmaceutical Education and the Executive Committee of the American Association of College of Pharmacy in Washington, D. C., February 26 and 27.—Dean R. A. Kuever attended the Iowa Pharmaceutical Association Convention in Des Moines, February 23 and 24.

University of Kansas, School of Pharmacy.—Laboratory furniture for pharmaceutical chemistry research amounting to \$15,000, is on bid and will be installed this summer. \$4,300 worth of equipment for pharmaceutical chemistry research has also been added recently.—Dr. Ralph W. Clark presided as chairman for the colleges of the Sixth District meeting of the state boards and colleges of pharmacy at Oklahoma City in March. Dean Reese presented a paper on “Teaching personnel in Schools of Pharmacy”.

Long Island University, Brooklyn College of Pharmacy.—Mr. Edward Neimeth, chairman of the board of trustees, has also been elected a member of the board of trustees of the Long Island College of Medicine. As a token of Mr. Neimeth's long efforts, both in time and money, for the College of Pharmacy, the faculty and trustees presented him with a cap and gown.—Dean Hugo H. Schaefer recently addressed the direct-

ors and stockholders of the American Fire Insurance Company at a memorial dinner in honor of the late Dean Emeritus William C. Anderson, at Cincinnati, Ohio. Dr. Anderson was an organizer and director of the Company.—Dr. Cosmo Ligorio has been promoted to a full professorship in chemistry and physics, and Prof. Berl S. Alstodt, to the rank of associate professor of chemistry.—A faculty room devoted to social purpose has been equipped by the faculty and the trustees.—The Alumni Association has circularized its 4000 graduates for active interest in the Association's work. Over 25 per cent responded to the appeal by the payment of dues.—An article dealing with the effects of caffeine on the early development of the fertilized egg of the sea urchin, by Dr. Ralph Cheney, was published in the February issue of the *Biological Bulletin*.

University of Maryland, School of Pharmacy.—The following are the officers recently chosen by the Students' Auxiliary of the Maryland Pharmaceutical Association: Norman Schenker, president; Ronald Mendelsohn, vice president; Bernard McDougall, second vice president; Donald Fedder, treasurer; Barbara Marshall, secretary; and Leon Greenberg, editor. Martin Bowers, Samuel Exler and Richard Crane are members of the Executive Committee. Dr. Frank Slama is faculty adviser. This group plans the program for the monthly meetings. Each member of the three upper classes receives a copy of the *Maryland Pharmacist* for a nominal fee through the courtesy of the Maryland Pharmaceutical Association.—The Rho Chi Society has elected the following membership: Ursula Biermacher and Roland Healey—graduate students; Jerome Berlin, Jacob Meyers, and John Magiros—fourth year students; Leon Greenberg, June Heinritz, Mitzie Holen, Ronald Mendelsohn, Lila Miller, Gertrude Robson, Charlotte Rubenstein, Jerome Schwartz, and Sally Weinberger—third year students.—The Epsilon Chapter of Lambda Kappa Sigma will be host to the national convention of the sorority, which will be held at the Lord Baltimore Hotel in June. Amelia DeDominicis is president, and Mrs. Rita Bradford is corresponding secretary of the local chapter, and Mrs. Belle Dirstine of Orgeon is president of the Grand Council.—Many of the faculty are participating in The Pharmaceutical Survey. They include Dr. B. Olive Cole, who attended a meeting of the sub-committee on Curriculum of Business Administration and Pharmaceutical Law in January; Dr. Walter Hartung, who attended a meeting of the sub-committee on Curriculum of Chemistry in March; and Dr. C. W. Chapman, who will attend a meeting of the subcommittee on Pharmacology in April. Dean A. G. DuMez is vice chairman of The Pharmaceutical Survey Committee and is very active in the work of The Survey, particularly as it pertains to the work of the accrediting of colleges by the American Council on Pharmaceutical Education.

Massachusetts College of Pharmacy.—At the annual meeting, the Corporation Treasurer, Daniel O. Wolff, presented an interesting report which concluded with the statement that the resources of the college at the close of the fiscal year, June 30, 1947, amounted to \$2,755,581.20. This includes the permanent funds in the care of the Trustees of Funds.—Secretary J. Everett Brown of the Trustees of Funds reported that the permanent funds in their care amounted to \$1,368,740.04. The yield from the investment of these funds during the past year was 3.56 per cent.—Auditor Ralph R. Patch commented on the excellent earnings on the investments compared with those of other institutions that invest money under similar restrictions. He pointed out that the college must expect further declines in earnings on its investments until there is a reversal of present economic trends.—Dean Howard C. Newton's annual report showed expenditures of \$171,046.60 for the fiscal year. Tuition and other fees received from students during this period amounted to \$104,610.30. He called attention to the fact that several new laboratories and considerable new equipment must be provided during the next two years, stating that as much as \$125,000 to spend for new laboratories and equipment. This proposal was enthusiastically endorsed, and a committee with Prof. Howard L. Reed as chairman was appointed to conduct a campaign for the 125th Anniversary Laboratory and Equipment Fund with its goal set at \$125,000. When the campaign was officially announced on January 28, the committee had advance pledges of more than \$35,000 of which more than \$20,000 had been paid. Construction and equipment of a new research laboratory has already begun. It now seems that the celebration of the 125th anniversary of the founding of the college will be a significant event in its history.—For the session of 1948-49, six fellowships will be available. Although appointments are on a yearly basis, the fellowships may be held for two years. The stipend is approximately \$1000 for the first year and \$1200 for the second year.—The Annual Refresher Course will be presented this year on May 18-27. One of the guest speakers will be Dr. William P. Murphy, Nobel prize winner for his work in the field of anti-anemic therapy. His subject is "The Status of Anti-anemia Therapy at the Present Time". Another guest speaker is Dr. Paul C. Olsen, noted author and lecturer on drug store management. His topic is "The Use of Incentive-Pay Plans in Drug Store Management".—At the mid-winter meeting of the Maine Pharmaceutical Association, held in Bangor on February 19, Profs. Ohmart and Stoklosa presented a lecture and demonstration embodying the results of investigations in the field of dermatologic preparations.—Prof. Ohmart is to take part in the program of the Pharmacy Conference sponsored by the Pittsburgh Branch of the American Pharmaceutical Association to be held at the Mellon Institute on April 21.

University of Minnesota, College of Pharmacy.—The eleventh Continuation Study Course in Pharmacy held on February 23, 24, 25, was attended by fifty retail and hospital pharmacists. The faculty for the course included staff members from the colleges, schools, and departments of pharmacy, veterinary medicine, chemistry, pharmacology, public health, and Minnesota Department of Health. Dr. George Webster of the University of Illinois was a guest lecturer.—The interior of Wulling Hall has undergone complete redecoration. Fluorescent lighting will be installed throughout.—Members of the faculty were active during the 63rd annual meeting of the Minnesota State Pharmaceutical Association in St. Paul on April 12-14. Dr. Charles V. Netz gave a number of reports. Dr. Charles O. Wilson formulated a full day program for the Professional Pharmacy Section. At the conclusion of the meeting Dr. Willard J. Harley was installed as secretary to succeed Dr. Netz who had asked to be relieved of the position.—Dr. Earl B. Fischer is chairman of the board of management of the University Y. M. C. A.—Dr. Ray S. Kelly of the Massachusetts College of Pharmacy was a campus visitor on March 10.—Dr. Charles O. Wilson has accepted a position with the University of Texas College of Pharmacy, effective July 1, 1948.—The student branch of the A. Ph. A. was favored with addresses by Dr. George Webster on February 24 and by Dr. Ray S. Kelly on March 10.—Mr. Frank E. DiGangi has been appointed assistant professor of pharmaceutical chemistry effective July 1, 1948. Mr. DiGangi received a B. S. degree from Rutgers University College of Pharmacy, an M. S., degree from Western Reserve College of Pharmacy, and will complete his studies for the Ph. D., degree at the University of Minnesota during the coming summer.—Mr. Frank W. Bope, who will complete studies for his doctorate this summer, has been appointed assistant professor in the pharmacy college, Ohio State University.—Dean Charles H. Rogers completed the revision of his text, *Inorganic Pharmaceutical Chemistry*. Dr. Charles O. Wilson and Dr. Taito O. Soine collaborated in the revision.—On January 14, the faculty spent the evening with the Board of Pharmacy in the discussion of mutual problems.—There were 367 students enrolled at the beginning of the winter quarter.—A group of 50 students visited the laboratories and manufacturing plant of Parke, Davis and Company at Detroit, on March 23-24. Dr. and Mrs. Charles V. Netz accompanied the group.

University of Montana, School of Pharmacy.—Mlle. Suzanne Henriette Pierrette Abran of Oran, Algeria, who received the Bachelor of Science degree from the University of Algiers in January, 1947, has registered for graduate work in pharmacy.—Mr. Trygve Brensdal, B. Sc. in Pharmacy, '47, is now completing work for the Master's degree in pharmacy.—New equipment includes a Beckman pH meter, Model H, a Drierite tube used in vacuum distillation, and a set of X-Ray equipment. The latter is a donation made by the General Electrical X-Ray

Corporation of Spokane.—“The Montana Pharmacist” has been established under the sponsorship of the students of the school as a quarterly and will serve the student body, the alumni, and the faculty, succeeding the news letter which formerly appeared at irregular intervals.—Lillian Onimura has been awarded the American Pharmaceutical Education Scholarship, and Ruth Peterson is the recipient for the current year of a scholarship provided by the Montana State Pharmaceutical Association.—A room has been provided for a pharmacy, and the equipment is being supplied largely by the State Pharmaceutical Association. The pharmacy will be used for dispensing prescriptions for the Student Health Service and in the teaching of general courses.—Both the registration in all classes and the grade averages of the students have this year reached an all time high. The inauguration of a pre-pharmacy year, which had been planned to become effective in September, 1948, has been postponed awaiting the results of the study being carried out by The Pharmaceutical Survey.

University of Nebraska, College of Pharmacy.—Dr. D. M. Pace, department of physiology and pharmacology, attended the meetings of the American Association for the Advancement of Science in Chicago in December.—Er-hung Djao and Shao-Chia Chou, graduates of West China Union University, have enrolled in the graduate school and are majoring in pharmaceutical chemistry.—A special fund of \$5,000 has been allocated for the purchase of apparatus for research.—Kappa Psi recently initiated eleven new members, and Kappa Epsilon took in three.—By the erection of a temporary building, store room, office spaces and additional laboratory space has been provided for 60 students.—A sum of \$3,000 has been granted for library books and periodicals.—Dr. P. J. Jannke has been elected vice president of the Nebraska section of the American Chemical Society.—Newly elected officers of the Student Branch of the A. Ph. A. are: Richard F. McMahon, president; Walter P. Johnson, vice president; Dorothyann Miller, secretary; and Warren Barth, treasurer.—Dr. H. G. O. Holck has been granted funds by the Research Council of the University to support a cooperative study of acute toxicity of soluble drugs in white mice, which is to be carried on under the auspices of the Committee on Physiological Testing of the American Pharmaceutical Association. Dr. Holck has recently published an article in the *Journal of the American Pharmaceutical Association* on “The Influence of the Preliminary Administration of Insulin or of Epinephrine Hydrochloride Upon the Fatal Dose of Sodium Evipal in Albino Mice”.—Dr. Paul Jannke spoke recently before the local chapter of Sigma Xi on “The Significance and Origin of the Volatile Oils”.—Dr. Walter Militzer spoke recently before the local Rho Chi chapter on “Inside Biochemistry”.—Dr. Harold Fuller is convalescing at his home from a major operation.—Hugh DeLos Bryan has been elected an associate member of Sigma Xi.—Dean J. B. Burt attended the joint meeting

of the Executive Committee of the A. A. C. P. and the A. C. P. E. which was held in Washington in February for the purpose of considering the revamping of the rules of the accreditation of colleges.—Paul B. McKibben, representing the Abbott Laboratories, exhibited a film showing the manufacture and use of pentothal sodium at a recent meeting of the Student Branch of the A. Ph. A. As a part of the same program, through the courtesy of C. H. Overman of the National Cash Register Company, a film was shown entitled: "Can You Fill This Prescription?"—Newly elected officers of the Kappa Psi Fraternity are: James B. Harley, regent; Hugh R. Roettger, vice regent; Warren Barth, secretary; Joseph Williams, treasurer; Donald Ediger, historian; and John Hyre, chaplain.—Cherie Lou Viele, a pharmacy junior, is one of the 22 contestants surviving the first elimination in the selection of a typical Nebraska coed.

University of North Carolina, School of Pharmacy.—The Xi Chapter of Rho Chi recently initiated fourteen undergraduates: Sam Cavanaugh, James Edwards, William Forrest, Winfield Gardner, Hal Hawkins, Raymond Heath, John Hood, W. A. King, Mary Elizabeth Lockwood, Thomas Mitchell, G. R. Pittman, William Puckett, Winfield Rose, and Peggy Ann Simmons. The chapter is holding monthly dinner meetings followed by programs of student discussions on new drugs.—Mr. J. W. Harrell, of E. R. Squibb & Sons, recently presented a technicolor movie on "Penicillin".—Two programs were given by students organizations in competition for the twenty-five dollar prize offered by the Student Branch of the North Carolina Pharmaceutical Association. The Pharmacy Senate presented a debate: "Resolved, that modern commercial practices in pharmacy are preventing its development as a profession". (The negative side won.) Phi Delta Chi offered an original play, "A Day in a Pharmacy".—The Board of Directors of the North Carolina Pharmaceutical Research Foundation, Inc., appropriated funds for five research fellowships special equipment, and special library materials to the school of pharmacy for the year 1948-49. Funds were also appropriated to begin a project on the experimental culture of drug plants. A handsome, illustrated brochure has been published to explain the objective of the Foundation.

Ohio State University, College of Pharmacy.—Recently the Student Branch sponsored two lectures by Dr. T. H. Jukes of the Pharmaceutical Division of the Lederle Laboratories. His topics were *Recent Studies with Folic Acid and Related Compounds* and *Some Biological effects of Synthetic Analogues of Folic Acid*.—Dr. Earl P. Guth recently visited the College of Pharmacy of the State University of Iowa and the University of Michigan to study the cooperative medical service and drug supplies plan in operation and the teaching of hospital pharmacy in these institutions.—Dr. W. R. Byrum gave an illustrated lecture recently be-

fore the Lancaster Retail Pharmacists' Association on *Allergy and Anaphylaxis*.—Prof. Norman Hughes, Mr. W. S. Luton, and Lt. Col. R. W. Meikleham of the Ontario College of Pharmacy recently visited the campus to obtain information of value in making a contemplated change in their program.—New appointments to the faculty this year are Drs. John W. Nelson, A. S. Ridolfo and W. R. Byrum.—Drs. Byrum, Ridolfo and R. C. Darlington have been elected to membership in Sigma Xi.—Dr. Guth has been appointed a member of the Council of Instruction. He has also recently addressed the Vocational Information Conference on *The Five Year Program in Pharmacy*.—Dr. Nelson addressed the Phi Rho Alpha Society recently on *Pharmacognosy as a Future Career for Graduates*. The fourteen seniors who will be graduated at the end of the winter quarter assumed for a day the management of the Kauffman-Lattimer Wholesale Drug Company. This is an annual affair and gives the student some idea as to how a wholesale house functions.—The juniors and seniors made their annual trip to the Parke, Davis Plant at Detroit the first week in March.—The Rho Chi society initiated 17 new members at the close of the winter quarter, bringing the total membership to 27 undergraduate and 9 graduate students.—The Student Branch is planning their program for the annual convention in May. Students will present papers in the following sections: Hospital, Practical, and Historical Pharmacy, Scientific, and a Graduate Seminar.

University of Oklahoma, School of Pharmacy.—The fourteenth annual practice convention was held on March 5. Papers were read at the various sections throughout the day. New officers were elected and prizes awarded. Awards for the best papers went to Henry Phelps, A. Marion Smith, and Catherine Cunningham. Robert Beck won the Rho Chi award as the highest ranking sophomore; Tom Lout received the Lehn and Fink medal for being the highest ranking senior; Lambda Kappa Sigma's prize went to Marquerite Jones as the outstanding woman student; and the Buckley award went to A. Marion Smith as the outstanding man student. The keynote address of the day was given by R. M. Vliet of the Fox-Vliet Drug Company. His topic was "We Have Much To Do". The day's program concluded with a banquet in the evening.—Lillian Burum, was elected "Miss Pharmacy of 1948", and received her crown and gifts from the hands of Tom Stockdell, Alexander Drug. Gifts for "Miss Pharmacy" and her attendants were the gratuity of Coty and Bourjois.—The School of Pharmacy is occupying a number of rooms on the lower floors of the Pharmacy building which have until recently been occupied by the departments of physics and chemistry.

Oregon State College, School of Pharmacy.—Dean George E. Crossen has been elected First Grand Vice Regent of Kappa Psi fraternity.—Dean Crossen, who is president of the North Pacific Branch of the A. Ph. A. has announced plan for a Pharmacists' Seminar to be held

at the school on April 14 and 15.—Virginia Downing was the 1947 recipient of the annual \$50 award presented by McKesson & Robbins.—Mr. Frederick Grill of Portland has been appointed assistant professor of pharmacy. Prof. Grill saw overseas service during the war and for some time was chief of the biochemistry staff at the Medical Technician School, Army and Navy General Hospital at Hot Springs, Arkansas. For eleven years before the war he was a member of the staff of the North Pacific College.—Mrs. June Crane has been appointed an instructor in pharmacy.—New officers of the student branch of the A. Ph. A. are: Charles Summy, president; Louis Johnson, vice president; Barbara Grubb, secretary; Betty Phelps, treasurer; and Helen Briscoe, historian.—The Rho Chi Society is sponsoring monthly seminars which are attended by junior and senior students.—Rooms in the pharmacy building, formerly occupied by the department of psychology, are being vacated and the space will house the laboratories for pharmacy, pharmacology, and manufacturing pharmacy.—\$5,000 has been expended for new equipment.

Philadelphia College of Pharmacy & Science.—Martin S. Ulan, Rutgers University College of Pharmacy, addressed the Student Branch of the A. Ph. A. recently. His subject was "The Interesting Story of Drugs".—Dr. J. W. E. Harrison is the author of an article entitled, "Anti-vivisection Propaganda Handicaps Science", which appeared in the September, 1947 issue of the *Food, Drug and Cosmetic Law Quarterly*.—Dr. Paul Olsen was the speaker at the December meeting at Buffalo of the Western New York Branch of the A. Ph. A. His subject was "Recent Economic Trends of Interest to Pharmacists". In November he spoke on "Trade Unionism in Selling Organizations" before the Sales Managers Club of Philadelphia.—The following scholarships have been announced: To sophomores, the Alumni, to Yaeno Yori-moto; the Bridges, to Alvin F. Shinn; the Cliffe, to George MacDiarmid; and the Maisch, to Daniel C. Brown. To juniors, the American Foundation, to Ruth Weinstock; the Jones, to Harold F. Zionts; the Shinn, to David J. Krigstein; and the Trogh, to Lester S. Cohen. To seniors, the American Foundation, to Mrs. Mildred B. Miller; the Powers, to Alfonso Gennaro; the Wiegand, to Calvin Foltz; and the Williamson, to Philip Friedman. In addition, A. C. Kunkel of the Breyer Ice Cream Company announced the Breyer scholarships as follows: Mrs. Mary D. Kistler, senior; John D. Shaw, Jr., junior; Charles A. Fenstermacher, sophomore; and Gilbert H. Greenstein, freshman.—Dr. Arthur Osol recently addressed the students of chemistry at the University of Pennsylvania on "A 17th Century's Message for 20th Century Chemists".—Robert S. Sherwin, long a trustee and custodian of the endowment funds of the college, died in Jacksonville, Florida, January 29, 1948.—Another staunch supporter, Mrs. W. Wilson McNeary, wife of one of our board members, died at the home of her son in Charlotte, North Carolina, on

February 6, 1948.—Registrar John E. Kramer was the speaker at a vocational assembly at the Atlantic City, New Jersey high school recently.—Assistant Dean L. F. Tice was the speaker at the mid-winter meeting of the Delaware Pharmaceutical Society in Wilmington.—Publication has been announced by Rutgers University Press of a new book by Dr. Paul Olsen on "Marketing Drug Products".

University of Pittsburgh, Pittsburgh, College of Pharmacy.—The Board of Trustees of the University of Pittsburgh has announced that through a merger, effective January 26, 1948, the Pittsburgh College of Pharmacy, for many years an affiliate school, is now The University of Pittsburgh School of Pharmacy.—Dr. Joseph Bianculli, who served as development chemist for the American Cyanamid Company from 1942-1945 and then became assistant director of chemical research for Reed and Carnick, has been appointed assistant professor of pharmaceutical chemistry.—Other additions to the staff are Jeanne R. Smalldone, Dorothea Jannosko, Edward Tillman, and Richard M. Doughty. They have all been appointed as graduate assistants.

University of Puerto Rico, College of Pharmacy.—Four hundred students are now matriculated in pharmacy. This is the largest number in history. The increase is largely due to veterans, but the passage of a good pharmacy law is partly responsible in that it has made pharmacy more attractive.—The teaching staff has also been enlarged. Miss Edna Martinez, M. S., who has specialized in hospital pharmacy, is teaching one of the courses in theory and practice. Miss Henrietta Orlandi, B. S., an alumna, is giving laboratory supervision and teaching mathematics. Mr. Rudolfo Escabi, M. S., University of Maryland, is in charge of dispensing. Drs. Menedez and Rodriguez Olleris are now giving lectures in materia medica and physiological chemistry respectively.—The wholesale house of Droqueria J. M. Blanco, Inc., one of the oldest concerns in the Island, has established two scholarships of \$400 each. The selection of the students is made by the Office of Student Services, the dean of the college, Lcdo. Luis Torres-Diaz, with the final approval of the chancellor of the University. This year the awards have been made to Mr. Raul Gonzales Melendez, a sophomore, and Mr. Raul Diaz Gonzalez, a senior.

Purdue University, School of Pharmacy.—Dr. Egil Ramstad of the University of Oslo, Norway, has been appointed visiting professor of pharmacognosy for the year 1948-49. Dr. Ramstad was educated at the Universities of Oslo and Liege in Belgium. He has occupied the chair of pharmacognosy at the University of Oslo since 1939, and at the same time has served as consultatory adviser to the Norwegian pharmaceutical industry and the Norwegian Medical Directorate. He holds membership in many learned societies and has published many

researches in the field of phytochemistry. He is a linguist with a command of the English, French, Latin, German, Dutch, Swedish, Danish and Norwegian languages. He will assume his duties at Purdue about August 1.—Prof. F. Norman Hughes, head of the Ontario College of Pharmacy, which is affiliated with the University of Toronto, accompanied by Lt. Col. R. W. Meikleham and Mr. W. S. Luton, who are members of the Council, visited the campus in February, conferring with members of the staff. Pharmaceutical education in Canada is being reorganized, and the visitors were interested in curricula, physical facilities and buildings, as well as staff requirements and methods of presenting subject matter to students.—Dr. John E. Christian has been appointed Advisory Editor of the Scientific Edition of the *Journal of the American Pharmaceutical Association*.—Dr. Christian has also been designated as Co-ordinator of Bio-nucleonics Research in the University by President F. L. Hovde.—Henry W. Heine has resigned from the staff to accept a position as Executive Secretary of the Indiana State Pharmaceutical Association.—Dr. Svend Aage Schou, professor of pharmacy in the Danish School of Pharmacy, Copenhagen, Denmark, visited the campus in December, and spent a day examining the various facilities and conferring with members of the staff.—B. K. Muzundar, Peter Baldwin, and Richard T. Adams, the last an alumnus of Purdue, came from India to see our facilities and confer relative to the requirements for establishing a school of pharmacy in India. They plan to establish a new university with pharmacy as an integral part of it.—Dean Glenn L. Jenkins gave the address at the graduation dinner of the Accident and Health Insurance Short Course on December 11, 1947, on the subject "Drugs and Health".—Dean Jenkins has been reappointed and recommissioned as a member of the Indiana State board of Health for a four-year term by Governor Ralph F. Gates.—Prof. Leroy D. Edwards attended a meeting of the Committee on Curriculum which is working in cooperation with The Pharmaceutical Survey, in Chicago, on February 6 and 7.

Rutgers University, New Jersey College of Pharmacy.—Dr. Paul Goedrich, sixty-one years old, a native of Vienna and honorary research fellow at the college since 1935, died March 14, 1948 in his sleep at his home in Newark. Karl Kleitsch, inventor of the rotogravure process, influenced Dr. Goedrich in the selection of chemistry as a career. Before coming to this country he taught at the University of Vienna. Later he was admitted to the Imperial Academy of Science and in 1928, after a lecture tour in the United States, he became associated with Merck and Company. He achieved recognition for his development of iodocholeate and sulfocodides. He is survived by his wife, Luise Marie Goedrich.—The basketball team won the Eastern Pharmacy League Championship this season.—Dr. William A. Cole, director of the Research Council of Rutgers University, addressed the student body at the second lecture sponsored by Alpha Eta Chapter of Rho Chi Society

in March. The title of his address was "Importance of Research to Mankind".—The Student Branch of the A. Ph. A. has been conducting a professional relations program that might be of interest to faculty advisers of such groups in other colleges. During this year joint meetings have been held with student groups from other colleges in the Newark area. At these meetings a speaker is selected to discuss a topic of interest to both groups. The meetings provide an opportunity for the students to begin learning of the problems of their fellow citizens.

University of South Carolina, School of Pharmacy.—Dr. J. E. Hunter, Ph. D., Iowa State College joined the pharmacy staff at the beginning of the current semester. He has had five years of teaching experience at Iowa State and seven years of research in the fields of micro-organism and antibiotic growth.—New temporary quarters and equipment have been provided for botany, pharmacognosy and pharmacy. All new equipment is of a permanent nature and will be transferred to the new building which is now being planned and which is expected to be completed by September, 1949.—The total registration is now 230. Thirty students are candidates for graduation in June.—The Student Branch of the A. Ph. A. now numbers 95 students. The Branch gave an original skit entitled, "A Day in the Life of a Pharmacist," with the members of the South Carolina Board as guests.—The university will hold a twelve week session the coming summer. Pharmacy students may enroll for a maximum of four subjects.—Marjorie Lucas, pharmacy senior, was crowned Valentine Queen of the Independents by Governor Thurmond at the Independents' annual ball on February 14.

The University of Southern California, College of Pharmacy.—A faculty survey of "The Role of Physical Sciences in the University" is now underway on the campus. It is quite an exhaustive program and should result in recommendations for new facilities and equipment in all science departments. This will be of special interest to students of the graduate school—Dean Alvah G. Hall has been appointed a member of the Committee on Predictive and Achievement Tests for the A. A. C. P.—Prof. Willard G. Smith is building a new home on Mount Washington, only 9 miles from the campus.—Mrs. June Dayton is a new instructor in chemistry. She is substituting for Prof. J. Frank Smith, who is absent due to illness.—A \$1000 fellowship from the Alexander Katz Laboratory in Hollywood is now being offered to a graduate in pharmacy for the study of perfumes and essential oils.

Temple University, School of Pharmacy.—Prof. Harry G. Cornfield, although he had submitted his resignation as assistant professor of pharmacy, has agreed to act as temporary head of the department, following the death of Dr. Harry W. Mantz, until the close of the year.

Prof. Cornfield has been on the staff since 1924. He is a practicing pharmacist in Collingdale, was a charter member of the local post of the American Legion, past president of the Delaware County Pharmaceutical Association and was president of the Collingdale Board of Education for seven successive terms.—Twelve men and nine women were graduated with the Bachelor's degree at the commencement exercises on March 6. Dr. Lloyd E. Blauch, of the U. S. Office of Education, gave the commencement address. Louis R. Stezzi won ten of the twenty-three prizes offered and received honorable mention in five others. The commencement exercises were the last to be held in mid-year under the school's accelerated wartime program.

University of Texas, College of Pharmacy.—Thirty-one students were graduated at the end of the first semester,—Cyrus Terry and Mil-lan Wood with high honors. The graduates were the guests of Eli Lilly & Company at Old Seville Restaurant on January 24. They were served a Mexican dinner.—The A. Ph. A. Student Branch has recently been shown a film, "The Prescription", through the courtesy of E. R. Squibb and Company. At another meeting J. R. Risinger of the Texas Liquor Control Laboratory discussed the liquor laws affecting pharmacy.—Dean H. M. Burlage and Miss Esther Wood attended the meetings of District No. 6 in Oklahoma City in March.—The pharmacy offices and laboratories have recently been redecorated and equipped with fluorescent lighting.—Dean and Mrs. Burlage and a group of seniors and alumni made a tour of the Parke—Davis, the Upjohn, and the Walgreen and Abbott laboratories the last week in March.

Medical College of Virginia, School of Pharmacy.—The Hospital Pharmacy has just opened its new first floor dispensary in the Clinic Building. It is connected by a dumbwaiter with the main part of the pharmacy. A separate room for the preparation of parenteral solutions has been provided. Russell A. Fiske, chief pharmacist and associate professor of pharmacy is its director. The dispensary, designed to increase the efficiency of the pharmacy department of the college and to offer better service to the outpatient clinic, will also offer practical training to pharmacy students and enable the college to become accredited for teaching hospital pharmacy. A pharmacy internship will also be offered. It is estimated that an average of 260 prescriptions will be filled weekly in the new dispensary.—Dr. Roshier W. Miller, former dean of the school of pharmacy and for 51 years a member of the faculty of the Medical College of Virginia, is to be honored by the presentation of a portrait on January 31, 1948. The funds necessary for this painting have been contributed by his former students and colleagues, under the chairmanship of Dean Emeritus W. F. Rudd.—Dr. M. L. Neuroth, Grand Councillor of Rho Chi Society, installed a new chapter for that group at the Medical College of the State of South Carolina on January 9,

1948.—Dr. S. S. Negus, professor of chemistry, and Dr. R. D. Hughes, professor of biology, attended the American Association for the Advancement of science meetings in Chicago during the holidays.—Dr. Negus is the new administrator of the Richmond Area University Center. Dean R. B. Smith, Jr. is the secretary of the General Council in the same organization.—Dr. K. L. Kaufman has been appointed to one of the committees of Virginia Section of the American Chemical Society.—Mr. B. F. Putney, assistant in pharmacy, attended the Kappa Psi fraternity's national convention in Chicago during the holidays. Mr. Putney and Mr. R. D. Anderson, assistant in hospital pharmacy, will attend the graduate school next year.—Miss Eva Mae Fleming, assistant in hospital pharmacy, has resigned her position effective March 1, 1948, in order to work in a retail pharmacy at Crewe, Virginia.—The Richmond Retail Druggist Association and the local wholesale houses entertained the senior class and the faculty of the school of pharmacy at a dinner on January 6.—Dr. R. B. Smith, Jr. attended the sub-committee meeting of

Biological Assay of the U. S. P. Revision Committee in New York on February 25.—Dr. Smith, Jr., Dr. L. D. Abbott, and Dr. J. C. Forbes attended the Federation of American Societies for Experimental Biology in Atlantic City the week of March 15.—Dr. M. L. Neuroth and Mr. Blake F. Putney accompanied 46 juniors and seniors on an inspection trip to the Eli Lilly and Company plant in March.—Dr. Neuroth attended the District Meeting of Boards and Colleges in New York City on March 21 and 22.—The Medical College of Virginia is now publishing a house organ under the editorship of M. W. Topping, assistant to president Sanger.—J. Y. Thomas, who will graduate in June, has accepted a position as pharmacist on the hospital staff.—Dean Smith addressed the Peninsula Registered Pharmacists' Association at Hilton, Virginia on March 11. His subject was "Some Problems Affecting Pharmacy and Pharmaceutical Education".—Dr. and Mrs. K. L. Kaufman have recently moved to their new home in Westover Hills district.

State College of Washington, School of Pharmacy.—Dr. Haakon Bang and Dr. Allen I White have been promoted to full professorship.—Eleven students have recently pledged membership to the local chapter of Rho Chi.—A laboratory-classroom for the study of proprietary preparations and crude drugs has been recently completed and is now in use.—Valeska Evertsbusch was recently awarded a \$50.00 scholarship by the Women's State Auxiliary of the Washington Pharmaceutical Association, and Elaine Stafford was awarded a scholarship by the Spokane Branch of the same association.—Willard Fuller has been awarded the Elwyn Swetmann scholarship.

University of Washington, College of Pharmacy.—Mr. L. D. Bracken, one of America's outstanding pharmacists and owner of three pre-

scription pharmacies in Seattle, was recently made an honorary member of Rho Chi.—Mrs. K. R. Irani, wife of Dr. Irani, a post doctorate student here, flew from Calcutta to join her husband at the University. Mrs. Irani received her Master's degree in psychology from the University of Calcutta in December and is continuing her work here. Dr. Irani is especially interested in American manufacturing methods.—The college is adding an elective course in hospital pharmacy which will start with the winter quarter of the 1948-49 school year. The present plan is to place the students in the various hospital pharmacies in the city for a part of their work. This will supplement regular lecture and discussion meetings on the campus. It follows the basic pattern which was so effective in the "Washington Experiment" where the senior students in dispensing were given a year of instruction in the local professional pharmacies. Plans are proceeding also for the developing of an effective academic program in manufacturing pharmacy which will be undertaken as soon as the Medical School Hospital is built.—Lambda Kappa Sigma has made the dressing of the windows in the Demonstration Pharmacy one of its projects.—Prof. James Alexander Wood, College of Pharmacy, University of Saskatchewan, has enrolled for the summer session of the Graduate School. He will begin his work for the Master's Degree in Pharmacy.—Prof. Finlay Morrison, Department of Pharmacy, University of British Columbia, will also start work for the Master's Degree in Pharmacy the coming summer.—Dr. H. A. Langenhan attended the January meeting of the U. S. P. Revision Committee in New York.—Beginning in the fall of 1948 there will be available ten teaching fellowships for graduate students. These teaching fellowships pay \$110 a month.

Wayne University, College of Pharmacy.—A number of new additions to the faculty have been made recently. They include: Dr. Harold E. Bailey, botany and bacteriology; Dr. Simon Benson, physiology and pharmacology; Paul F. Cole, hospital pharmacy; Mary L. Anderson, pharmacy; Gretchen B. Obrecht, pharmaceutical botany; George Wolfer, special instructor in new and non-official remedies; and Cecelia Niklas, administrative assistant.—A contract has been entered into with the Detroit Receiving Hospital which provides for the administration of the pharmaceutical laboratories and services and the utilization of the institution's facilities for instruction in hospital pharmacy by a full time member of the faculty. Mr. Paul Cole was secured for this work. He had served as Chief Pharmacist of the Michael Reese Hospital of Chicago for a period of twelve years.—The policy of limiting enrollment of students was begun in September.

Western Reserve University, School of Pharmacy.—The death of Prof. Clarence M. Finrock, Dean of the School of Law, is announced with regret. For many years Dean Finrock served the pharmacy school as an instructor in pharmaceutical jurisprudence and became of his kind-

ly personal qualities he endeared himself to both his students and his colleagues.—The following students have been elected members of Rho Chi: William A. Feiler, Jack K. Fowler, and Dale Little, juniors; Edward O. Rauchfleisch, senior; Sally D. Holton, graduate and honorary fellow of the American-Scandinavian Foundation; and Leonard P. Prusak, graduate fellow of the American Foundation for Pharmaceutical Education.—Drs. Albert Mattocks and Pierre Smith are carrying on a cooperative study with Dr. Arnold Lazarow of the Medical School on experimental diabetes by carrying out synthetic experiments and studying enzyme function in the disease.—Richard Sherwood, graduate student, is investigating the causes of penicillin decomposition in ointment bases.—William A. Feiler has been awarded an American Foundation for Pharmaceutical Education scholarship for the spring semester.—Helen Skowronska has been appointed full time librarian for the pharmacy library.

University of Wyoming, School of Pharmacy.—The pharmacy library has received some valuable reference books and unbound journals from Dean R. A. Bowers of the University of New Mexico.—Dr. Irene Rosenfeld, research pharmacologist, and O. A. Beath, research chemist, published an article on *The Influence of Various Substances on Chronic Selenium Poisoning* in the November, 1947 issue of the *Journal of Pharmacology & Experimental Therapeutics*. The same investigators have done extensive work on the toxicology of *Senecio Riddellii*.—A considerable amount of special apparatus for work in pharmacognosy has been supplied that laboratory.—Davis Brothers, of Denver, Colorado have established a special scholarship fund of \$150 for worthy pharmacy students. By action of the board of trustees the School of Pharmacy is made a separate school—coordinate with the other colleges of the University, effective July 1, 1948.—Sixty students are enrolled for the spring quarter.—The pharmacy club has planned speakers for a series of meetings during the current quarter.—The National Association of Boards of Pharmacy, through Secretary P. H. Costello, has presented the University with copies of the Proceedings from 1909 to 1947, with the exception of those for the years 1913, 1927, and 1930. Also, Proceedings for 1907 and 1908 are desired. The University would like to obtain the missing numbers.—A large number of books have been added to the pharmacy library recently.—New tables equipped with goose-neck water faucets, gas jets, electric outlets, with fluorescent lighting have been installed in the pharmacognosy laboratory.

**MINUTES OF THE EXECUTIVE COMMITTEE OF THE
AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY**

Hotel Washington, Washington, D. C.

February 27, 1948

The Executive Committee met in Washington, D. C., Friday, February 27, 1948: Present Messrs. Charles W. Ballard, Joseph B. Burt, J. Lester Hayman, R. A. Lyman, Howard C. Newton, Henry S. Johnson, Arthur H. Uhl, Robert C. Wilson and Louis C. Zopf.

President Uhl was appointed to serve as chairman of the meeting. Chairman Christensen was absent due to illness. On motion of Johnson, seconded by Burt, Secretary Zopf was instructed to send a message of cheer to chairman Christensen.

Reporting on the lecturship tours, President Uhl suggested that the implementation of these tours be held in abeyance until such time as teaching personnel was more readily available.

Motion by Newton, seconded by Burt, it is recommended that action be deferred on the implementation of the lectureship tours until the next academic year because of critical personnel situation. Carried.

Dr. Robert P. Fischelis was invited to address the Executive Committee at this time. He stressed the importance of the co-operation of schools and colleges of pharmacy with the U. S. Public Health Service in supplying good, high quality pharmacists. He mentioned the fact that he felt the professional service which a pharmacist could render to the U. S. Public Health was very significant and he encouraged the colleges to consider the inclusion of a course or courses in the curriculum dealing with public health. Dr. Fischelis mentioned the effort which the Great Britain Pharmacy students are putting forth to organize an international society of pharmacy students. He suggested the careful consideration by the various teaching staffs of the colleges toward such a movement. It was his opinion that it should be carefully considered before offering encouragement. He stated that the Association was working on plans for a directory of pharmacists and emphasized the proportions of the task such a project represented. It was suggested by the Executive Committee that the A. A. C. P. Committee on Emergency Problems be instructed to assist the A. Ph. A. group in the compilation of the directory.

President Uhl reported that the pharmaceutical seminars are to be postponed for one year.

The report on enrollments in colleges and schools of pharmacy for the second term 1947-48 was read and approved.

Dr. Elliott, director of the Pharmaceutical Survey, was invited to address the Executive Committee. Dr. Elliot made several observations regarding the findings of the Survey Committee. He stressed the responsibility of the colleges in the area of curriculum building. He emphasized progress that had been made with the curriculum study and indicated that the implementation and further progress is the province of the schools and colleges of pharmacy.

The meeting reconvened at 1:45 P. M. Guests present: Dr. Lloyd Blauch, Dean Jenkins, and Dean Kendig.

Dr. Blauch spoke to the Executive Committee extemporaneously and emphasized the fact that we of the colleges of pharmacy must direct our thinking toward the time when all students coming to the colleges will be graduates from the fourteen grade public school system. He further stated that the curriculum should be based on definite objectives and that the elevation of educational standards for pharmacists should be commensurate with those of the professions with which he associates.

The first item of business concerned the proposal which was made and approved at the joint meeting of the Board of Directors of the American Council on Pharmaceutical Education and the members of the Executive Committee of the American Association of Colleges of Pharmacy. The proposal considered was for a change in policy and accreditation standards of the A. C. P. E. The major change consisting of an alphabetical classification of all colleges through A, B, C, and D. After a very thorough discussion and debate, the following resolution by Burt, seconded by Ballard, was approved for transmission to the Directors of the American Council on Pharmaceutical Education currently in separate session: 'The Executive Committee of the American Association of Colleges of Pharmacy approves in principle, the classification of accredited schools of pharmacy as proposed by the American Council on Pharmaceutical Education.'

Dean Kendig presented 'The Report of the Committee to Study the Question of a Professional Degree to be Awarded Upon the Completion of a Curriculum Covering More Than Four Years.' On motion by Ballard, seconded by Burt, the report was received and recommended for publication in the *Journal* as space would permit.

The question of naming a delegate to the Pan-American Congress of Pharmacy in Havana, Cuba, in December 1948 was deferred until

the August meeting. It was learned that the American Pharmaceutical Association is sending delegates to this conference and that these men might also serve as representatives for our Association.

Editor Lyman reported an increase in subscription to the *Journal* and stated that Mr. Costello, Secretary of the N. A. B. P., was sending a letter to all board members, encouraging them to subscribe to the *Journal*. General methods of improving the financial picture for the *Journal* were discussed. It was suggested that Secretary Zopf write to the Secretary of the American Foundation of Pharmaceutical Education regarding the disposition of the request for financial aid for the *Journal*.

It was moved by Burt, seconded by Newton, that the expenses of the Executive Committee for the extra day, hotel, and meals be paid by the A. A. C. P. Approved.

President Uhl, appointed the following committee to study and report on the application for membership received from the Southern College of Pharmacy. The report to be made to the Executive Committee and to the general session of the A. A. C. P. at San Francisco in August. Burt, Chairman, Newton, and Johnson.

Dean Wilson discussed the report of the South American Schools of Pharmacy which were received after the official report of the special Committee had been submitted.

The program for the San Francisco meeting was discussed. The next meeting of the Executive Committee was scheduled for Sunday morning, 10 A. M., August 8, 1948, with the first general session scheduled for Sunday afternoon. Headquarter hotels are: Fairmont and Mark Hopkins.

Adjourned 4:15 P. M.

Miscellaneous Items of Interest

Memorials

Harry W. Mantz

Professor Harry W. Mantz, head of the department of pharmacy in the School of Pharmacy, Temple University, died after a brief illness, on Christmas day, 1947. Three weeks earlier he had an attack of coronary occlusion from which, until the day before his death, he seemed to be making a satisfactory recovery.

Harry W. Mantz was born at Summit Hill, Pennsylvania, April 26, 1903. He graduated from Franklin and Marshall Preparatory School and then enrolled in Franklin and Marshall College. After three years he withdrew and entered Temple University School of Pharmacy and graduated June, 1926, receiving the degree Ph. G.

He continued his studies in Temple University and successively earned the degrees Bachelor of Science in Education, Bachelor of Science in Pharmacy, Master of Science in Pharmacy. At the time of his death he had completed all of the requirements for the doctor's degree in education except the thesis which was nearing completion.

Professor Mantz had a fine mind, was a brilliant student and was avid for knowledge. This desire for more and more education was evidenced by his almost continuous enrollment in institutions of higher education from the time of his enrollment in Franklin and Marshall College in 1920 until his death in 1947.

He was appointed to the teaching staff of the School of Pharmacy as instructor in Pharmacy in 1926 and was steadily advanced until 1947 when he became Professor of Pharmacy. In 1941 he was appointed assistant to the Dean.

Professor Mantz possessed a rare gift for friendship. His genial disposition and ability as a teacher and executive brought to him many requests for assistance in the organizations and societies in which he was interested. He served on the board of directors of the School of Pharmacy alumni association. He was president of the association

for three years. He was a member of the board of directors of the general alumni association of Temple University representing the School of Pharmacy Alumni Association. He was a member of the University Senate and was particularly active in work having to do with student welfare and extra-curricular activities.

He held membership in the American Pharmaceutical Association and in the Philadelphia Branch of that Association. He was a member of the Pennsylvania Pharmaceutical Association, his local Parent Teachers Association and other civic and welfare organizations. He was an active member of the Christ Presbyterian Church, Overbrook Hills, Pennsylvania. He was a member of Psi Kappa Sigma fraternity, Franklin and Marshal College chapter.

When Dean Kendig suffered from a coronary occlusion in the fall of 1946, plans were being drawn for a new building for the School of Pharmacy; Professor Mantz was appointed to act for him and represent the School of Pharmacy with the Temple University administrative officers and with the architect and builders in completing the plans for the installations for the School in the new building purchased by the University. The excellence of the layout for the department of pharmacy and the skillful planning in general are due to his thought and suggestions.

Professor Mantz was preeminently a family man and his first thought was always for his wife and children. Owning a farm in the Pocono Mountains he spent his vacations with his family. He taught his children the mysteries of and a love for the outdoors. An ardent hunter and fisherman he regularly fished for trout in season and hunted small game and deer in the fall.

Harry W. Mantz was one of the most loveable characters it has been my good fortune to meet. A man of the highest ideals and exemplary character he was loved by all who knew him. He was interested in people and especially directed that interest toward his students. His devotion to the students and his sincere love of his co-workers made him one of the most beloved men on the campus. In his passing pharmacy has lost a splendid teacher and leader and we of Temple University feel a void which it will be difficult to fill.

H. Evert Kending

Minutes of A.A.C.P. and A.C.P.E. Conference

Minutes of the twenty-fifth meeting of the Board of Directors of the American Council on Pharmaceutical Education, Inc.—Joint Meeting of the Board of Directors of the American Council of Pharmaceutical Education, Inc., and the members of the Executive Committee of the American Association of Colleges of Pharmacy.

Time and Place of Meeting. The Joint Meeting of the Board of Directors of the American Council on Pharmaceutical Education, Inc., and the members of the Executive Committee of the American Association of Colleges of Pharmacy was held at the Washington Hotel in Washington, D. C. on Thursday, February 26, 1948 at 10:00 A. M.

Persons in Attendance. Members of the Council: Messrs. George D. Beal, L. D. Bracken, P. H. Costello, A. G. DuMez, R. P. Fischelis, Glenn L. Jenkins, Ernest Little, H. C. McAllister, R. L. Swain and Earl J. McGrath.

Members of the Executive Committee of the American Association of Colleges of Pharmacy: Messrs. Charles W. Ballard, Joseph B. Burt, Lester J. Hayman, Henry S. Johnson, Rufus A. Lyman, Howard C. Newton, Arthur H. Uhl, Robert C. Wilson and Louis C. Zopf.

Present by invitation: Dr. E. C. Elliott, Director of the Pharmaceutical Survey.

Presiding Officer. P. H. Costello, President, A. C. P. E.

A—Opening Statement by President Costello. President Costello stated that the Council desired to secure the views of the members of the Executive Committee of the A. A. C. P. certain changes which it was proposed to make in policy and accreditation standards of the A. C. P. E. as a result of recommendations made by the Director of the Pharmaceutical Survey to the Council. That in particular, it was the desire of the Council to have a full and frank discussion of the proposal made by the Director of the Pharmaceutical Survey which would require that accredited colleges of pharmacy be classified according to some system such as the following:

Class A—Those colleges which have no important deficiencies.

Class B—Those colleges which have deficiencies which can be corrected promptly by administrative action.

Class C—Those colleges which have deficiencies which it will take considerable time and effort to correct. A college in this class will be given a period of two years in which to correct its deficiencies or be dropped from the accredited list.

Class D—Newly established colleges which have had only a part of their curricula accredited. These will be designated as 1 D, 2 D and 3 D to indicate the number of years of the curriculum which has been accredited.

Class D was added to Dr. Elliott's recommendations by the Secretary of the Council to provide for newly established colleges of pharmacy which, under the present policy, are permitted to apply for accreditation of as much of their curricula as they have in full operation.

With this brief explanation of the purpose for which the joint meeting was called, President Costello introduced President Uhl of the A. A. C. P.

B—*Statement of President Uhl.* President Uhl expressed his appreciation of the spirit of cooperation exhibited by the Council in inviting the members of the Executive Committee of the A. A. C. P. to present their views on such an important change in policy as that entailed by the classification of the colleges of pharmacy accredited by the Council. He stated further, that he believed he could say on behalf of the other members of the Executive Committee of the A. A. C. P. that they were pleased to have this opportunity to discuss with the members of the Council such changes in accreditation policy and procedure as the Council saw fit to bring before the group; that they too were imbued with the spirit of cooperation as it was believed that cooperative effort was the most satisfactory way of solving problems of mutual interest and that the Council could expect as much assistance as it was possible for them to give. In particular, Dr. Uhl stated that he personally favored a classification of accredited colleges of pharmacy.

C—*Proposed Statement of Policy and Accreditation Procedures of the Council.* The Secretary of the Council stated that at the present time, the Council's accreditation policy and procedures were not in print and were only available to members of the Council, but that there was need for this material to be assembled and published so that it would become available to the colleges of pharmacy as well as other educational institutions, state boards of pharmacy, libraries, etc. In order that those present might have some idea of what is intended along this line and because it has a bearing on the matters to be discussed at this meeting, the

Secretary of the Council prepared a tentative statement, copies of which were distributed to those in attendance. This statement was read by the Secretary in order to familiarize those present with its text and coverage. In the brief discussion which followed, satisfaction was expressed with the statement in general. (Copy of statement attached hereto)

D—*Proposal to Classify Accredited Colleges of Pharmacy.* Following the reading of the first rough draft of the foregoing statement of accreditation policy and procedure, the proposal to divide the accredited colleges of pharmacy into classes based upon the degree to which they meet the Council's standards was taken up for consideration. The discussion which followed was participated in by all persons in attendance. A good idea of what those present thought of the merits of the proposal was obtained and several good suggestions and recommendations regard to the proposed system of classification were made.

On motion by Dr. Jenkins, seconded by Dr. Johnson and carried, the decision reached was that accredited colleges of pharmacy should be divided into classes in the future. The decision reached on this motion at this joint meeting of the Council and the A. A. C. P. was also reached by the Executive Committee of the A. A. C. P. at a meeting held by that body on the next day as shown by the following communication received from the Secretary of the A. A. C. P.:

American Council on Pharmaceutical Education:

"The Executive Committee of the American Association of Colleges of Pharmacy approves in principle, the classification of accredited schools of pharmacy as proposed by the American Council on Pharmaceutical Education'.

Washington, D. C., February 27, 1948.

Dr. Beal suggested that some letter other than "D" be used to designate the grade of a college which had only a part of its curriculum accredited as he felt that the letter "D", because it comes immediately after the letter "C" in the alphabet, would imply to some persons that the college was of a lower grade than that of the colleges in classes, A, B and C, whereas this might not be true. He suggested that the letter "T" be used to designate this class. Another suggestion was that the letter "Y" (first letter in year) be used for this class and that it be preceded by the numbers 1, 2 or 3 to indicate how many years of the curriculum are accredited.

Dr. Swain raised the question of the advisability of accrediting any college of pharmacy which did not have the full four years of its curriculum in operation. Several persons expressed the opinion that the

accreditation of a portion of the curriculum of the college of pharmacy would tend to encourage the opening of new colleges of pharmacy. The main reason offered for accrediting a portion of the curriculum was that it would prevent, in large measure the possibility of a student finding himself in the position of having attended a newly established college of pharmacy for four years and suddenly discovering that the institution was not accredited and that, therefore, he would not be eligible to take the State Board of Pharmacy examinations for licensure.

Dr. Newton expressed opposition to the accreditation of the first years work of the curriculum on the grounds that the work of the first year was practically all arts and science work. The latter view was concurred in by several others.

Dr. McGrath, on the basis of his experience with the North Central Association in the accreditation of Arts and Science Colleges, stated that he believed that classes "B" had no value and suggested that it be eliminated and that the two remaining classes in the proposed classification be moved up. Other less important phases of this question were also discussed. At the end of the discussion of the advisability of accrediting colleges which have only a portion of their curriculum in operation, the opinions expressed for and against seemed to be about equally divided.

With respect to the proposed system of classification, it was suggested by several persons that the period given to a college in class "C" to correct its deficiencies be three years instead of two. The reason advanced for this suggestion was that State Legislatures meet once in every two years as a rule and that a college should be given an additional year to correct its deficiencies after the State Legislature has appropriated the funds required for this purpose. The consensus of opinion expressed in the discussion of this subject favored the three year period over the two year period.

E—Changes Approved in the Present Standards for the Accreditation of Colleges of Pharmacy. The following changes in the standards for the accreditation of colleges of pharmacy proposed by the Council were approved in principle. There seemed to be no objection to the proposed changes, except in the wording in some instances. The idea in not approving these proposed changes in full was to permit the Council to make changes in the wording based on the suggestions made in the discussion of the particular standards to be revised.

Proposed Changes In Standards.

I. Required Length of Period of Operation.

Paragraph 2, line 1. Delete the first 6 words.

II. *Finances.*

Insert the following after paragraph 2 and renumber paragraph 3.

3. In the case of a college which is a unit within a larger educational institution, such as a university, it is essential that the amount of funds allocated to the college of pharmacy for educational purposes shall be adequate to support its educational program and that as a rule it shall be at least 50 per cent greater per student than that allocated to the college of Arts and Science.

III. *Organization and Administrative Policy.*

This standard should be restated with the view to making it more fitting for application to state universities and colleges.

VI. *Minimum Admission Requirements.*

Delete paragraph 5 on p. 17.

VIII. *Curriculum and Degrees.*

Delete paragraph 7 on p. 19.

New. To be added to standards.

XIII. *Progress Report.* To maintain or improve its accreditation status, the college shall file with the Council on or before July 1 of each year a report giving evidence that it is not only maintaining the standards for accreditation but that it is making continuous progress in the improvement and development of its educational program. This report should give data on: (1) student enrollment for the year, (2) degrees granted, (3) changes in the faculty, (4) changes in requirements for admission and graduation, (5) changes in curriculum and improvements in methods of instruction, (6) changes in the administrative organization, (7) number of volumes added to the library, (8) improvements and additions to the physical plant, (9) changes in the budget, (10) brief description of any special studies or projects under way, (11) list of articles published by members of the faculty during the year, (12) etc.

F—*Adjournment.* The meeting adjourned at 5:30 P. M .

Accreditation Policy and Procedures of the American Council on Pharmaceutical Education

Policy

Introductions. This statement of policy defines briefly certain rules or principles that will be followed by the American Council on Pharmaceutical Education in the accreditation of colleges of pharmacy and includes the standards that will be used as the bases of accreditation.

Meaning of Accreditation: Accreditation as used herein means the certification of a college of pharmacy by the American Council on Pharmaceutical Education as meeting or surpassing certain standards which it is believed an institution worthy of public recognition as a college of pharmacy should maintain.

The Council: The American Council on Pharmaceutical Education is the national accrediting agency for colleges of pharmacy. It is sponsored and authorized by the National Association of Boards of Pharmacy, the American Association of Colleges of Pharmacy and the American Pharmaceutical Association. It was organized in 1932 and incorporated as a non-profit organization in 1940. Each of the sponsoring associations has three representatives on the Council and there is one representative from the American Council on Education, who acts in an advisory capacity. The present membership of the Council is as follows:

Representing the American Pharmaceutical Association:

L. D. Bracken, Seattle, Wash.
George D. Beal, *Vice-President*, Pittsburgh, Pa.
R. P. Fischelis, Washington, D. C.

Representing the American Association of Colleges of Pharmacy:

Ernest Little, Newark, N. J.
A. G. DuMez, *Secretary-Treasurer*, Baltimore, Md.
Glenn L. Jenkins, Lafayette, Ind.

Representing the National Association of Boards of Pharmacy:

R. L. Swain, New York, N. Y.
P. H. Costello, *President*, Chicago, Ill.
H. C. McAllister, Chapel Hill, N. C.

Representing the American Council on Education:

Earl J. McGrath, Iowa City, Ia.

Bases of Accreditation. The standards defined herein, which a college of pharmacy must maintain or surpass to be approved by the Council, are the bases of accreditation.

However, in the application of these standards to a college under investigation for accreditation, the Council may not insist on strict conformity in every detail but many assume the attitude that certain reasonable variations should not mitigate against a favorable decision. The Council will hold to the principle that excellence in certain characteristics of a college may compensate for deficiencies in other characteristics.

In judging a college on the bases of these standards both qualitative and quantitative criteria will be used.

Quantitative criteria will be evaluated largely through data secured from catalogues, and other publications and from the information furnished by the college on extensive questionnaires which be sent to it for completion. These criteria will include the following:

1. Auspices, organization and control of the institution.
2. Finances, source of income, investments and expenditures.
3. Age of the institution and of the four year curriculum.
4. Basis of requirement for admission of students.
5. Number enrolled.
6. Curricula and degrees offered.
7. Attendance, promotion and graduation requirements.
8. Teaching staff and teaching load.
9. Physical facilities.
10. Etc.

Qualitative criteria will be evaluated in part through the information obtained from questionnaires and in part through a survey of the college by a committee of inspection consisting of at least two members of the Council. These criteria will include the following:

1. Qualification, experience, scientific or scholarly publications of the members of the faculty. Also their contacts with and membership in scientific and professional societies.
2. Standards and quality of instruction.
 - a. In the pharmacy departments
 - b. In the cooperating departments

3. Scholastic records of students.
4. Extra curricula activities. Participation in the work of local, state and national pharmaceutical organizations.
5. Attitude and policy of administration toward its college of pharmacy and toward teaching, research, etc.
6. Etc.

Purposes of Accreditation. The primary purposes of accreditation as held by the Council are as follows:

1. To advance the standards of pharmaceutical education in the United States and its possessions.
2. To describe the characteristics of the educational institutions worthy of public recognition as colleges of pharmacy.
3. To provide a safe basis for the selection of pharmacy colleges by prospective students.
4. To provide a usable basis for the interpretation of inter-institutional relationships.
5. To provide a list of acceptable colleges of pharmacy for the use of state boards of pharmaceutical examiners and other interested agencies.

Eligibility for Accreditation. Eligibility for accreditation will be based on the character of a college of pharmacy as a whole, including all of the units participating in its operation. In the case of participating units, such as a college of arts and sciences or a medical college, which fall within the areas of other accrediting agencies, the judgment of such agencies will be taken into account, but the Council reserves the right to exercise its own judgment in all cases in which the latter action seems to be desirable.

A college of pharmacy which, as a whole, is judged by the Council after investigation, as maintaining or surpassing the standards defined herein will be given accreditation status in accordance with the class for which it qualifies.

Classification of Accredited Colleges. For the purpose of inducing accredited colleges of pharmacy to continuously put forth their best efforts to improve and develop their educational programs, they will be classified as follows:

Class A—Those colleges which have no important deficiencies.

Class B—Those colleges which have deficiencies which can be corrected promptly by administrative action.

Class C—Those colleges which have deficiencies which it will take considerable time and effort to correct. A college in this class will be given a period of two years in which to correct its deficiencies or be dropped from the accredited list.

Class D—Newly established colleges which have only a part of their curricula accredited. These will be designated as 1 D, 2 D and 3 D to indicate the number of years of the curriculum which has been accredited.

Period of Accreditation. The Council recognizes that standards for accreditation cannot be fixed and inflexible, that there is need for constant revision and improvement of policies and procedures, and that reinspections of the colleges at definite intervals will be necessary to make effective any changes in these policies. In order to keep informed on current conditions in the colleges, an annual report will be called for and reinspections will be made at least once every five years.

Publication of List of Accredited Colleges. A revised list of the colleges accredited by the Council will be published after the projected program for reinspections has been completed and as frequently thereafter as deemed desirable.

Accreditation Procedures

Application for Accreditation. A college of pharmacy to be considered for accreditation by the American Council on Pharmaceutical Education must initiate negotiations by filing a formal application with the Secretary on a special form provided for the purpose. Before filing the application, it must be approved by the state university, the state department of education, or the state pharmaceutical association of the state in which the college is located. Two copies of the college catalogue or announcement should be filed with the application.

The application will be examined by the Secretary. If it is found to be in good order, the college will be sent certain questionnaire forms calling for the additional data required for full consideration of the application by the Council. If the action of the Council is favorable, after having considered in full the data supplied by the completed questionnaires, the college will be notified and arrangements will be made for a survey of the college by a committee of the Council. In case the information supplied by the completed questionnaires is of such character as to indicate that the probable rejection of the application,

the Secretary may, in his discretion, advise the college to withhold its application until such time as the unfavorable conditions in the college have been corrected. During the period intervening between the preliminary examination of the application by the Secretary and the beginning of the survey, it may be withdrawn at any time.

At the time arrangements are made for the survey, the college will pay to the Council the fee charged for this purpose, which for the present has been fixed at \$350.

Report of Survey Committee. The Secretary will supply the Survey Committee with all of the information which he has in his files on the college and, after the survey has been completed the Committee will submit its report, with recommendations, to the Council for consideration and disposal thereof.

The dean of the college and the president of the institution of which the college is a part will be notified of the action taken by the Council and will also be sent a copy of the full report of the survey committee, including the recommendations.

PHARMACEUTICAL SURVEY CURRENT

January — February 1948

Members of the Committee on the Pharmaceutical Survey

Inventory Days

To The Survey staff, the coming of the new year meant six more months to go in completing the two- year fact-finding phase of The Survey. To that end, the staff has been taking stock of "Operations Incomplete". An inventory has been made of unfinished business. Fact-Finding Assemblies, submitted to individuals and organizations for verification, are being put into final form. Renewed efforts have been necessary to fill in gaps where information has not been supplied. Data on final sets of questionnaires are being processed. Reports are rolling off the mimeograph assembly-line for final consideration by the Committee. To date, 28 Committee Transmittals and 3 Executive Documents have been issued; others will be placed in the hands of the Committee prior to the Spring meeting.

Meeting of The Committee on The Pharmaceutical Survey

As reported in Press Release No. 11, the Committee held a two-day session in Washington February 2-3, 1948, to consider a number of the

special reports already prepared. The implementation phase of the Survey for 1948-49, discussed at the February meeting, will be reconsidered at the final meeting scheduled for June 14-15. At that meeting the final recommendations of The Survey will be considered.

Predictive Achievement Tests

With the always ready cooperation of Editor Lyman, the forthcoming issue of the *American Journal of Pharmaceutical Education* will contain the full report by Drs. Remmers and Gage on the 1946 predictive testing of entering freshman pharmacy students. Reprints will be distributed by The Survey to the schools of pharmacy. In May of this year, a limited program of achievement testing in several selected schools will be undertaken.

Prescription Study Analysis

The detailed and time-consuming analysis of 13,000 prescriptions is approaching final draft for publication. It is planned to issue 1,000 copies of the report which will be distributed to the deans, participants in the prescription study, and to others especially concerned with the results.

Curriculum Studies

The results of the deliberations of the Committee on Pharmacognosy, which met in Washington last fall under the direction of Dr. Lloyd E. Blauch, have been issued in mimeograph form and are being submitted to the deans for further comment and suggestions.

In January, Dr. Blauch held a four-day meeting of the Committee on Business Administration. During the first week in March the Committee on Chemistry will meet in Washington, and at a later date there will be meetings of committee to consider the curriculum in pharmacology, physiology, and anatomy.

The findings of these Committees dealing with the crucial problems of modernizing the curriculum will constitute a substantial cornerstone in the foundations of Survey findings.

On February 7, Dr. Blauch met in an all-day session with the Curriculum of the A. A. C. P. in Chicago, at which time the general pattern of the curriculum in pharmacy was discussed. Another meeting of this Committee is to be held in the near future. The Committee is being kept informed concerning the curriculum studies being carried forward by The Survey.

A report on the place of general education in the professional curriculum is being prepared for The Survey by Dr. Earl J. McGrath, of The State University of Iowa.

Activities Analysis

A time-duty analysis of the activities of two pharmacists in an independent drug store in Columbus Ohio, has been completed by Dr. James A. Brunner.

Through the generosity of the Walgreen Drug Stores a time-motion analysis of the activities of the managers and other pharmacists in three retail drug stores was made by M. E. Mundel and C. W. McFarland, of Lafayette, Indiana.

The results of these two studies were presented to the Committee of The Pharmaceutical Survey at the February meeting.

Retail Reactions

Valuable data are being supplied to The Survey on the problems of retail pharmacy from responses received from approximately 400 retail pharmacists throughout the country. The findings of these data will be presented to the Committee at the forthcoming meeting.

Other Things Of Moment

Sets of the State Board Examinations given in twelve states in 1947 are now being critically rated. The outcome of this rating promises to be of significance for the pharmaceutical curriculum.

The Survey, in collaboration with the *American Professional Pharmacist*, is tabulating 345 replies to a questionnaire on hospital pharmacy recently sent by that publication to 2,300 hospital pharmacists.

Pharmaceutical Peregrinations

Due to the heavy pressures of a tight time schedule in bringing the fact-finding work of The Survey to a conclusion, the Director will find it impossible to accept the numerous invitations reaching his desk urging him to address various pharmaceutical organizations.

His Journeys during January and February took him to Cleveland, Chicago, Lafayette, New York, New Haven and Hartford, where he addressed several important groups and held valuable conferences with representatives of the pharmaceutical profession.

Plans For Publication

According to the present schedule, the first of the principal reports of The Survey should be published immediately after the next meeting of the Committee on The Pharmaceutical Survey to be held on June 14-15. This report will contain the major findings and recommendations. Meanwhile, certain of the special studies, such as the Student Testing will be issued and distributed in monograph form.

The printing situation being what it is, as to costs and time, renders impossible the making of definite plans for the publication of the complete record of The Survey. We are trying to be optimistic and hope that the material will be distributed before the end of the summer.

Edward C. Elliott, Director

Under date of February 13, Director Elliott reported that the Committee on The Pharmaceutical Survey held its seventh meeting on February 2 and 3, 1948, in Washington. Reports presented to the Committee the Director included those on the practical experience requirement for licensure, organization and administration of state board of pharmacy, pharmaceutical, manufacturers' detail men, additional faculty statements on problems of pharmacy, and an extensive list of factual data concerning the areas in which pharmacy operates.

Publication plans for the prescription study, which is nearing completion, were discussed. Dr. L. E. Blauch, Assistant Director in charge of Curriculum Studies, reported on the meetings of the consultative committees dealing with the problems of modernizing the instruction in pharmacy, pharmacognosy, and pharmaceutical economics.

Special attention was given to two unique time and motion studies of the daily activities of the pharmacists in several selected pharmacies.

The director reported that 400 replies have been received to the inquiry sent to 1000 retail pharmacists throughout the country. The analysis of these replies is yielding significant information relative to the problems of the drug store.

An important part of the Committee's discussions dealt with the implementation phase of The Survey during 1948-49.

The next meeting of the Committee will be held April 19-20, 1948, at which time many of the final recommendations of The Survey will be considered.

History of Pharmacy In The University of Michigan*

From The Regents' Proceedings

Very early in the history of the University, thought was given to the matter of the introduction of courses in pharmacy. The first United States Pharmacopoeia was published in Boston, in December, 1820, and was followed by the first decennial revision in 1830. Within this ten year period, two detached institutions of learning were established in eastern centers of population for the sole purpose of providing instruction in pharmacy. Believing that consideration should be given to the teaching of this important subject along with chemistry and other allied sciences, the Regents of the University of Michigan at their meeting which was held October 2, 1839, adopted the following resolution:

"Resolved, that the appointment of Professor of Geology and Mineralogy in the University be tendered to Dr. Douglass Houghton, of Detroit, and that he be also charged with the subjects of Chemistry and Pharmacy, until the Regents take further order in relation thereto".

Although Dr. Houghton contributed to the scientific collections of the University, he never did any regular teaching. A few years later the records show that Silas Hamilton Douglas, a physician who had accompanied Dr. Houghton on his geological surveys of Michigan, was appointed assistant to Professor Houghton in the University and had charge of the work in Chemistry during the Professor's absence in the field. After Dr. Houghton's death in 1845, Dr. Douglas was continued in charge of the course in Chemistry and for the next thirty-two years developed the work under various titles, among them that of Professor of Chemistry, Mineralogy, Pharmacy and Toxicology from 1855 to 1870. To him belongs the credit for developing the laboratory sciences to the stage which made it necessary for the University to construct one of the first chemical laboratories to be built anywhere in the country. The Regents authorized the appropriation of funds for the building in May, 1856, and by autumn of that year the work of construction was completed. It

* Some confusion has arisen as to the exact date when pharmaceutical instruction was begun in the University of Michigan. This confusion seems to have arisen at least partly from the fact that the dates when instruction in pharmacy was instituted, when it was recognized as a distinct entity and given course standing, and when the work was organized as a school or college of pharmacy within the University do not coincide. Director Charles H. Stocking has supplied information directly from the Regents Proceedings and from the History of the Chemical Laboratory of the University of Michigan which definitely settles these points which we think is of sufficient historical interest to put on record by publication.—Editor.

was within the Chemical Laboratory that the College of Pharmacy was developed. Although the subject had been brought up for consideration on a number of occasions, it was not, however, until 1868 that the first courses in pharmacy were incorporated as a regular part of the University curriculum. At the Regents' Meeting of December 22, 1868, the President stated that a full course of study in Pharmacy had been drawn up and that he desired the approval of the Board that such course might be published in the forthcoming catalog and that a certificate of graduation in Pharmacy might be given to such students as should complete the course. This request met with the approval of the Regents, and it is interesting to note that at the Commencement exercises the following June twenty-three candidates were presented for the degree of Pharmaceutical Chemist.

The enrollment in the courses in Pharmacy increased consistantly, reaching an annual total of seventy-nine students in the year 1875-76. Due to the increasing popularity of this type of work and to the fact that Pharmacy became recognized as a specialized field, the following communication was presented to the Board of Regents by the Professors and Instructors in Pharmacy on December 22, 1876:

"To the Honorable Board of Regents:

"The undersigned, the officers of instruction in the Course "in Pharmacy, respectfully recommend that this Course, viz: the provisions for the instructor given under the requirements for the degree of Pharmaceutical Chemist, be constituted a separate branch or department of the University, under the name of the School of Pharmacy."

"Our recommendations seem to be supported by the following considerations. The Course in Pharmacy is a technical one throughout. As such, it is not parallel with any course in the Literary Department, and its inclusion in this Department has been only nominal. It is separated from other departments by the professional purpose of its work in the University, and by its relation to those who supply its students and employ its graduates. Nearly all of the required work of the Pharmacy classes is conducted with them separately, as shown by the accompanying Statement A, this separation being demanded by the size of the classes as well as by applications of the science taught. The permanence of the school seems to be assured by the steadily increasing support given it, as noted in Statement B. The officers who now give instruction in Pharmacy are named in Statement C.

Signed,

Silas H. Douglas
Albert B. Prescott
G. E. Frothingham
Wm. H. Pettee
John W. Langley
Volney M. Spaulding"

Statement A included a list of courses for first and second year students, Statement B summarized the attendance figures from 1868-69 to 1875-76. Statement C included a list of some twelve faculty members who conducted courses for Pharmacy students.

The approval of the Regents was granted to the request and the School of Pharmacy was established on the campus with the opening of the college year 1877-78. Dr. Albert B. Prescott became the first Dean of the School. Thus came into existence the first School of Pharmacy in the United States as an integral part of a state supported institution of higher learning.—Adopted in part from the *Regents Proceedings* by Acting Director Charles H. Stocking.

From The History of The Chemical Laboratory

It is within the Chemical Laboratory that the College of Pharmacy was developed. Although courses in pharmacy were given in conjunction with courses in analytical chemistry as early as 1860, a regular curriculum was not drawn up until 1868. The degree of Pharmaceutical Chemist was first conferred in 1869, but the College was not organized as an independent department until 1876-1877! In addition to his position as Professor of Organic Chemistry, Dr. Albert B. Prescott was appointed Dean of the College of Pharmacy in 1876, which position he filled for over twenty-eight years. During Dr. Prescott's administration—and in no small part due to his efforts—the standards of Pharmacy were very much raised not only in Michigan but throughout the entire country. Dr. Prescott's keen appreciation and encouragement of research in other branches of chemistry than pharmacy went far toward the establishment of a spirit of research throughout the Laboratory. The design of the department, as stated at the time of its organization, was to "qualify its graduates to become practical pharmacists, general analysts, and commercial manufacturers, and to give the training of systematic work in exact science". The first requirement for admission was that of "a good knowledge of the English language as determined by a written examination", but the full preparation of the ordinary high school was soon made requisite. The degree was obtained by successful students at the expiration of two years. It was not long until graduate work and a Master's degree were announced, and in 1896-1897 the degree of Bachelor of Science in Pharmacy was added. The course for this degree was one of four years, its entrance requirements and first year's work being uniform with those for the academic degrees in science. In 1913 the curriculum leading to the degree of Pharmaceutical Chemist was lengthened so as to require three years for its completion, the degree of Graduate in Pharmacy being given to those who had satisfactorily completed the former two years curriculum.—From the History of the Chemical Laboratory of the University of Michigan, by Edward D. Campbell. pp. 12-13.

* School of Pharmacy

NEW BOOKS

A Manual of Pharmacology and its Applications to Therapeutics & Toxicology, by Torald Sollman, M. D., Professor Emeritus of Pharmacology & Materia Medica, School of Medicine, Western Reserve University. 1948. Seventh Edition. 1132 pages. W. B. Saunders Company. Price \$11.50.

I have often wondered why Dr. Sollman, back in the middle teens of the century, when he wrote the first edition of this book called it a *Manual* of Pharmacology. If we accept the common dictionary meaning of the term "manual" it seemed to me to be a misnomer. Then as I have watched the book grow through succeeding editions, the word manual has become increasingly inappropriate. Now that it has reached edition number Eight it would seem more appropriate to call it *An Encyclopedia of Drug Action*. It has become to the field of pharmacology what the United States Dispensatory has to pharmacy—a standard reference book. I have viewed with some concern in these latter days as I have watched the growth of texts in the medical science field to see so many of them that were excellent teaching tools in the early years of the century become reference books as they approach the century's middle and becoming less efficient tools for the students in the class room. What is even more serious from the teaching point of view, I have seen in succeeding editions of a text, the personality of the author overwhelmed by and lost in a tremendous collection of factual statements. I have heard medical students, wearing Sigma Xi and Phi Beta Kappa keys, say in these latter days that all the text books they were required to buy in the various specialties when taking their undergraduate courses were worse than useless as study texts because they increased the chaos in the mind, and to make progress they had to throw away their books and depend upon the lecture notes to give them a skelton that they could retain and build upon. In the earlier edition of his *Manual* Dr. Sollman gave several pages to a historical resume of therapeutics which was a masterpiece of diction and simplicity which fired the student's interest as he entered upon the study of drug action. In the Seventh Edition he has reduced the substance of it to a page of fine print which may lead the student to pass over it as an area of no consequence. However, the studious student will soon learn that the areas of fine print are the most interesting and often the most revealing section of the text. Dr. Sollman has done a remarkable job of enlarging his text to a massive size and still hold the interest of the undergraduate student. The content of the book is what you would expect of any authority in the field. The latest is all in Sollman. The mechanics of the book is typical Saunders quality. No pharmacy library would be complete without a set of the seven editions of this text, for the series reveals the development of pharmacology in our day.—R. A. L.

Pharmaceutical Preparations, by George E. Crossen, Ph. D., Dean and Professor of Pharmacy, Oregon State College, and Karl J. Goldner, Ph. D., Professor of Pharmacy, University of Tennessee. 1948. Second Edition, thoroughly revised. 250 pages. Lea & Febiger. Price \$4.00. The authors state the first edition of this text was prepared for students entering upon detailed study of pharmaceutical preparations and having had some preliminary training in chemistry and fundamental laboratory methods. It is intended to be used in connection with the official compendia and therefore quotes from the standards where necessary. The classes of preparations are discussed in the order that the authors feel is most desirable to bring continuity to the subject and best comprehension by the student. They have also in each instance mentioned the possible uses of the preparation and, when applicable, have related it to the Federal Narcotic and poison laws. The reviewer is convinced that this is a most commendable feature. First impressions are those that sink the deepest in the student's mind and last the longest, and the uses of a drug and its dangers and the responsibility of the pharmacist in handling it cannot be too often repeated. The greatest problem which pharmaceutical educators now have before them is the improvement of methods of teaching, and young men and old men alike are to be commended for, and encouraged in any effort which they make in text book writing, and publishers also are to be commended for their producing texts in a form that is substantial and dignified.—R. A. L.

Clinical Toxicology,—by Clinton H. Thienes, MD., Ph.D., Professor of Pharmacology and Head of Department of Pharmacology and Toxicology, School of Medicine, University of Southern California; Attending Pathologist (Toxicology), Los Angeles County Hospital; and Thomas J. Haley, Ph.D., Fellow in the Department of Pharmacology and Toxicology, School of Medicine, University of Southern California, Formerly Graduate Assistant in Pharmacology, University of Florida, and Formerly Medical Director of E. S. Miller Laboratories, Los Angeles. Second Edition, 1948. Enlarged and Revised, 373 pp. Illustrated. Lea & Febiger. Price \$4.75.

This is the most practical text covering the subject discussed that has crossed the reviewer's horizon. As a medical student at the turn of the century he felt the need of a text that would consider the treatment of poisons from the clinical point of view. Like all medical students he was fed upon courses which dealt with the chemical nature of poisons. But as a student of medicine, and when he got into the active practice of medicine, he discovered that the treatment of poisoning was in the main physiological and pharmacological and in many cases a physical procedure, and not a chemical one. The authors in the present text have followed that very procedure. Furthermore, in the consideration of poisons they have applied what might be termed the therapeutic

formula to their classification. For example, the first section deals with convulsant poisons and within this section they have used the anatomical classification indicating the point of action of the poison. The four chapters deal with cerebral convulsants, medullary excitants, cord convulsants, and peripherically acting convulsants, respectively, and so on through the entire text. Within each section the individual drugs are arranged alphabetically and each poison is considered from the viewpoint of its toxic dose, its source, where it is absorbed, etiology of poisoning, its symptoms and action, the duration of the poisoning, the fate and excretion, the pathology induced, the diagnosis, the cause of death, and the treatment of the poison, both acute and chronic, when the latter is of importance.

The last three sections of the book (VII, VIII, IX) deal with the principles of treatment, an outline of symptom diagnosis, and chemical diagnosis of poisoning, in the order named. As these sections deal with broad general principles we wonder why the authors did not place them at the beginning of the text rather than at the end. Yet we appreciated that such general principles can be formulated only after the various poisons have been considered in detail. Perhaps they are where they belong. The reviewer who believes that good teaching requires a certain amount of repetition is bold enough to suggest that these three sections might be made both the alpha and the omega of the text. The only thing that would mitigate against such a procedure would be the present high cost of printing.

The text is not only a valuable teaching text, but is a handy reference for physicians, dentists, pharmacists, nurses, and technicians. Furthermore, it is very readable and even the layman might benefit by it, in correcting some of the commonly misunderstood ideas about poisons and poisoning.—R. A. L.

Anatomy and Physiology Laboratory Guide,—by Edward J. Farris Executive Director, Associate in Anatomy, The Wistar Institute of Anatomy & Biology. Fourth Edition. 144 pp, 126 illustrations. J. B. Lippincott Company. Price \$2.00.

This guide has been prepared especially for use as a companion book to the textbook, "Physiology and Anatomy." by Esther M. Greisheimer. The laboratory guide follows the text chapter by chapter, and its use in the laboratory will increase greatly the value of the text. All too frequently the laboratory work in a subject does not accompany the didactic instruction as it should in order to best clarify the problems discussed. The author of the guide has done admirably in accomplishing this objective. The illustrations are mainly line drawings and very clear. The guide could be used advantageously in any course in physiology, irrespective of the text used. Laboratory equipment and labora-

tory work in physiology are becoming standardized to such a degree that publishers are beginning to undertake publication of laboratory directions. This is most fortunate because a well printed guide adds immeasurably to the dignity of a laboratory course over the haphazard mimeographed sheet which the student looks upon as an ephemeral piece of paper to be consigned to the waste-basket at the earliest possible moment.—R. A. L.

A Textbook of Inorganic Pharmaceutical Chemistry by Charles H. Rogers, Sc. D., Dean of the College of Pharmacy and Professor of Pharmaceutical Chemistry, University of Minnesota, and Collaborators Taito O. Soine, Ph. D., Associate Professor of Pharmaceutical Chemistry University of Minnesota, and Charles O. Wilson, Ph. D., Professor of Pharmaceutical Chemistry, University of Minnesota. Fourth Edition, 1948. 704 pp. 23 illustrations. Lea & Febiger. Price \$10.00

This is a good book. Everyone is familiar with previous editions, and the author, the collaborators, and the publishers are a guarantee that the book is up to the usual standard of excellence. For years this book has occupied its field practically alone and with credit to the authors and the profession. The writer is not qualified to speak with any authority as to the sufficiency of any text in the chemical field, yet he has the opinion that he has enough intelligence and has had enough experience to recognize a good text when he sees one. One of the most to be commended changes in the text is the chemical properties and the pharmacological action of the elements and their compounds, and the extension of the discussions of the therapeutic value, and uses of the individual compounds and their pharmaceutical preparations. In fact, the writer hopes to live long enough to see some group of pharmaceutical writers produce a text on the pharmacy of medical substances that is based upon their use. Unfortunately, a lot of tradition will have to go over the dam before that is possible.

But Dr. Rogers' book disturbs me for another reason for when I showed the text to a colleague of mine in the department of chemistry of the University of Arizona he remarked after a rather superficial perusal that the text was a good one to teach general chemistry from. I knew he meant it, and I knew he wouldn't do it for there we have both tradition and bigotry to contend with and if one should substitute a salt of copper for one of calcium the course would no longer be a standard course in chemistry. To the general chemist pharmaceutical chemistry is to the chemist what the side-winder is to the rest of the crotalus family.

But I am also disturbed by a remark of one of my pharmaceutical colleagues when he expressed a hope that some qualified writer would produce a textbook on pharmaceutical chemistry that was not mainly general chemistry. To the educator this can only mean that in so-called

pharmaceutical chemistry we are covering largely the ground that the student should have mastered in his courses in general chemistry, and there is a great mass of material of a chemical nature that is of interest to the pharmacist that the general chemist is not at all concerned with. This mass of material might well be called pharmaceutical chemistry, and courses covering this field ought to be properly integrated with standard chemical courses so as to reduce repetition to the minimum that is necessary to make the principles involved stick in the students' mind. There is nothing that will be more helpful to the student in accomplishing this end than to dwell upon the action and use of a compound every time it confronts him. Dr. Rogers and his collaborators have made progress in this field, and we wish them more power in future editions.
—R. A. L.

DATA ON PHARMACY SCHOOLS IN THE WESTERN HEMISPHERE*

The following questions were asked concerning schools of pharmacy in the Western Hemisphere:

- 1) Name of the College or University—Location.
- 2) Name of the Dean of the School of Pharmacy.
- 3) Courses offered, with indication as to which are obligatory.
- 4) Number of professors comprising the School of Pharmacy.
- 5) Number of students comprising the School of Pharmacy.
- 6) How many years are required to complete the course?
- 7) Year in which the School of Pharmacy was founded.
- 8) Whether the School of Pharmacy functions independently, or forms part of a University.
- 9) Type of Degree granted at the completion of the course.

Replies on Pharmacy Schools in Brazil

Sao Paulo (capital of state of Sao Paulo)

- 1) Faculdade de Farmacia e Odontologia da Universidade de Sao Paulo.
- 1a) Sao Paulo, capital city of state of Sao Paulo.
- 2) Sr. Cyro A. Silva (Director).
- 3) Pharmacy and Odontology.
- 4) 13 Professors in the Pharmacy course.
- 5) 79 Students in the Pharmacy Course.
- 6) Three years.
- 7) Founded Oct. 12, 1898.
- 8) Functions as a part of the University of Sao Paulo.
- 9) Degree of Pharmacist. (Pharmacy)

* The Executive Committee asked Dr. Robert C. Wilson of the University of Georgia to obtain data on the schools of pharmacy of the Western Hemisphere which would be of general interest to pharmaceutical educators. This information will be published in the *Journal* as space permits. For the collection of this material we are indebted to Mr. Edgar J. Cook of the Abbott Laboratories International Company, Chicago. This data will be of value in showing the status of pharmaceutical education on our side of the globe.

Araraquara (state of Sao Paulo)

- 1) Escola de Farmacia e Odontologia de Araraquara, Araraquara, Est. Sao Paulo.
- 2) Dr. Joaquim de Arruda Camargo (Director).
- 3) Pharmacy and Odontology.
- 4) 12 Professors in the Pharmacy course.
- 5) 82 Students in the Pharmacy course.
- 6) Three years.
- 7) In 1923.
- 8) Independently.
- 9) Degree of Pharmacist (Pharmacy).

Curitiba (state of Parana)

- 1) Escola de Farmacia da Universidade do Parana.
- 1a) Curitiba, Est. Parana.
- 2) Dr. Assis Goncalves (Director).
- 3) Pharmacy.
- 4) 12 Professors (7 special, or private teachers).
- 5) 64 Students in the Pharmacy course.
- 6) Three years.
- 7) December 12, 1912.
- 8) An adjunct to the Faculty of Medicine of the Parana University.
- 9) Pharmacy Degree (Graduate Pharmacist).

Porto Alegre (Rio Grande do Sul)

- 1) School of Pharmacy of the University of Porto Alegre, Porto Alegre, Est. Rio Grande do Sul. (Portuguese name of school: Escola de Farmacia da Universidade de Porto Alegre).
- 2) Prof. Fernando Lartigau.
- 3) Pharmacy.
- 4) 14 Professors (4 special, or private teachers).
- 5) 43 Students in the Pharmacy course.
- 6) Three years.
- 7) February 17, 1895.
- 8) An adjunct to the Faculty of Medicine of the University of Porto Alegre.
- 9) Pharmacy Degree (Graduate Pharmacist).

Rio de Janeiro (D. Federal)

- 1) Faculdade Nacional de Farmacia, Rio de Janeiro, D. Federal.
- 2) Prof. Mario Taveira.
- 3) Professional formation, perfecting, specialization, Doctorate.
- 4) 13 Professors.
- 5) 86 Students in the Pharmacy course.

- 6) 3 years for professional formation (instruction), and one year for the other courses.
- 7) October 3, 1832.
- 8) Part of, or adjunct to the Universidade (University) of Brazil.
- 9) Degree in Chemical Pharmacy.

Estado do Rio de Janeiro—Niteroi (R. de J.)

- 1) Faculdade de Farmacia e Odontologia do Estado do Rio de Janeiro, located at Niteroi, R. de J.
- 2) Francisco Leite Bittencourt Sampaio (Director). Dr. Arnaldo Blake Sant'Ana (oldest professor).
- 3) Pharmacy.
- 4) 12 Professors.
- 5) 77 Students in the Pharmacy course.
- 6) Three years.
- 7) February 24, 1912.
- 8) Independently.
- 9) Pharmacy Degree.

Belo Horizonte (Est. Minas Gerais)

- 1) Faculdade de Farmacia e Odontologia da Universidade de Belo Horizonte. Belo Horizonte—Est. Minas Gerais.
- 2) Prof. Dr. Roberto de Almeida Cunha.
- 3) Pharmacy and Odontology.
- 4) 12 Professors.
- 5) 48 Students in the Pharmacy Course.
- 6) Three years.
- 7) March 12, 1916.
- 8) Independently.
- 9) Pharmacy degree.

Fortaleza (Est. Ceara)

- 1) Faculdade de Farmacia e Odontologia do Ceara, Fortaleza, Est. Ceara.
- 2) Professor Dr. Joaquim Juarez Furtado.
- 3) Pharmacy and Odontology.
- 4) 12 Professors.
- 5) 48 Students in the Pharmacy course.
- 6) Three years.
- 7) March 12, 1916.
- 8) Independently.
- 9) Pharmacy Degree.

Salvador (Est. da Bahia)

- 1) Escola de Farmacia Anexa a Faculdade de Medicina da Universidade da Bahia. Salvador, Bahia.

- 2) Sr. Adolfo Diniz Goncalves.
- 3) 1st year: Organic and Biological Chemistry and Botany, applied to Pharmacy; Physics applied to Pharmacy; Zoology and Parasitology.
2nd year: Analytical Chemistry; Galenic Pharmacy; Microbiology; Pharmacognosia.
3rd year: Chemical Pharmacy; Toxicological and Bromological Chemistry; Pharmaceutical Industrial Chemistry; Hygiene and Pharmaceutical Legislation.
- 4) 12 Professors.
- 5) 94 Students in the Pharmacy course.
- 6) Three years.
- 7) Founded by Decree on Oct. 3, 1832; a Royal Charter of Jan. 28, 1817 permitting students of the Surgical Medical College to take a practical examination in Pharmacy, by attending the Chemistry class, and thus obtain license to open pharmacy.
- 8) Adjunct or part of the Faculty of Medicine of the University of Bahia.
- 9) Pharmacy Degree.

Belem (Est. do Para)

- 1) Faculdade de Farmacia do Para—Belem, Para.
- 2) Sr. Aurelio da Silva Rosado.
- 3) Pharmacy (obligatory).
- 4) 12 Professors.
- 5) 19 Students in the Pharmacy course.
- 6) Three years.
- 7) 1941 and officially installed on Jan. 20, 1946.
- 8) Independent.
- 9) Pharmacy Degree.

Recife (Est. de Pernambuco)

- 1) Faculdade de Medicina da Universidade do Recife, e Escolas anexas de Farmacia e Odontologia, Recife, Pernambuco.
- 2) Sr. Alcides Codedeira (Director: Oscar Coutinho).
- 3) Medical, Odontological, Pharmaceutical, Obstetrical Nursing—Perfecting and Specializing courses—Technical course.
- 4) 12 Professors.
- 5) 67 Students.
- 6) Three years.
- 7) 1903 (recognized, 1905).
- 8) Adjunct to Faculty of Medicine of the University of Recife.
- 9) Pharmacy Degree.

INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY (Concluded)

New Jersey

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark (1923)
Thomas D. Rowe, Dean

New York

University of Buffalo, School of Pharmacy, Buffalo. (1930)
A. B. Lemon, Dean

Columbia University, College of Pharmacy of the City of New York. (1939)
Charles W. Ballard, Dean

Fordham University, College of Pharmacy, New York. (1939)
James H. Kidder, Dean

Union University, Albany College of Pharmacy, Albany. (1945)
Francis J. O'Brien, Dean

Long Island University, Brooklyn College of Pharmacy, Brooklyn (1939).
Hugo H. Schaefer, Dean.

North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill. (1917)
Marion L. Jacobs, Dean

North Dakota

North Dakota Agricultural College, School of Pharmacy, Fargo. (1922)
William F. Sudro, Dean

Ohio

Ohio Northern University, College of Pharmacy, Ada. (1925)
Rudolph H. Raabe, Dean

University of Cincinnati, Cincinnati College of Pharmacy. (1947)
Lyle Klotz, Dean

The Ohio State University, College of Pharmacy, Columbus. (1900)
Bernard V. Christensen, Dean

University of Toledo, College of Pharmacy, Toledo. (1941)
Charles H. Larwood, Dean

Western Reserve University, School of Pharmacy, Cleveland. (1902)
Arthur P. Wyss, Dean

Oklahoma

University of Oklahoma, School of Pharmacy, Norman. (1905)
D. B. R. Johnson, Dean

Oregon

Oregon State College, School of Pharmacy, Corvallis. (1915)
George E. Crossen, Dean

Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh. (1927)
Hugh C. Muldoon, Dean

Philadelphia College of Pharmacy and Science, Philadelphia. (1909)
Ivor Griffith, Dean

Temple University, School of Pharmacy, Philadelphia. (1928)
H. Evert Kendig, Dean

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh. (1900)
Edward C. Reif, Dean

Philippines

University of the Philippines, College of Pharmacy, Manila. (1917)
Paterno Valenzuela, Dean

Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras. (1926)
Luis Torres-Diaz, Dean

Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence. (1926)
W. Henry Rivard, Dean

South Carolina

Medical College of the State of South Carolina, Charleston. (1940)
William A. Prout, Director

University of South Carolina, School of Pharmacy, Columbia. (1906)
Emery T. Motley, Dean

South Dakota

South Dakota State College, Division of Pharmacy, Brookings. (1908)
Flored J. LeBlanc, Dean

Tennessee

University of Tennessee, School of Pharmacy, Memphis. (1914)
Robert L. Crowe, Dean

Texas

University of Texas, College of Pharmacy, Austin. (1926)
Henry M. Burlage, Dean

Virginia

Medical College of Virginia, School of Pharmacy, Richmond. (1908)
R. Blackwell Smith, Jr., Dean

Washington

State College of Washington, School of Pharmacy, Pullman. (1912)
Pearl H. Dirstine, Dean

University of Washington, College of Pharmacy, Seattle. (1903)
Forest J. Goodrich, Dean

West Virginia

West Virginia University, College of Pharmacy, Morgantown. (1920)
J. Lester Hayman, Dean

Wisconsin

University of Wisconsin, School of Pharmacy, Madison. (1900)
Arthur H. Uhl, Director

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